The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 133, NO. 5 CHICAGO, ILLINOIS FEBRUARY 1, 1947

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EPIDEMIC ENCEPHALITIS IN MILITARY PERSONNEL

Isolation of Japanese B Virus on Okinawa in 1945, Serologic Diagnosis, Clinical Manifestations, Epidemiologic Aspects and Use of Mouse Brain Vaccine

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A disease clinically similar to the Japanese B type of epidemic encephalitis was known to occur during the late summer months on Okinawa, predominantly among children.[1] However, it was not established that the Japanese B virus was the etiologic agent. On July 8, 1945 several cases of encephalitis were recognized in the native population on Heanza Shima, a small island 2 miles east of Okinawa, by Lieut. L. M. Miller, and on July 10, 1945 Lieut. Comdr. (later Comdr.) Leon Lewis (MC), U.S.N.R., of the Military Government discovered 4 patients with encephalitis in a large civilian hospital on Okinawa.[2] By the end of July, with the aid of the complement fixation test developed by Casals and Palacios [3] a diagnosis of epidemic encephalitis due to virus infection of the Japanese B type was made in several of these early cases by members of the Naval Medical Research Unit 2 who were first on the scene for the investigation of this outbreak.[4] According to Lieut. Comdr. W. Kees (MC), U.S.N.R., who studied the outbreak on the adjacent islands of Heanza and Hamahika, there were 31 cases with onset between July 1 and July 25, 1945 among a native population of 6,547 (an incidence of 4.7 per 1,000) on Heanza and 5 cases on Hamahika during the same period among a population of 1,500 (an incidence of 3.3 per 1,000). This was the total extent of the epidemic on these islands with a case fatality rate of 30.6 per cent. The epidemic on the island of Okinawa continued through August and the early part of September; while 91 cases of encephalitis were found,[2] it was the opinion of Lieut. W. E. Mosher (MC), U.S.N.R., the epidemiologist for the Military Government, that this number may have represented only 15 to 30 per cent of the total, because special conditions precluded discovery of all the cases. Over 80 per cent of the cases were in children 15 years of age or younger, and the case fatality rate was 28.6 per cent.[2]

During the months of July, August and September, 1945, some form of virus infection of the nervous system was suspected in 38 members of the American Military forces. Only 12 of these exhibited severe or moderately severe signs and symptoms of encephalitis and 2 died—1 on August 7 and the other August 17. Most of the others had relatively mild illnesses with transitory nuchal rigidity and reflex changes which, with a few exceptions, were associated with pleocytosis.

ISOLATION OF THE VIRUS

The etiology of the outbreak was established by complement fixation and neutralization tests on the serums of patients in suspected cases and by the isolation of a single strain of virus from a fatal native case.[5] In the first fatal military case, which terminated on the tenth day of illness and exhibited widespread lesions in the brain and cord,[6] a vigorous attempt was made to isolate the virus from the brain and cord. Many mice were inoculated both on Okinawa and in the United States with samples of gray matter taken from both sides of the frontal, parietal and occipital areas of the neopallial cortex, from the cerebellar cortex and from the midbrain, pons, medulla and upper cervical cord, but despite the fact that multiple lesions were present in all these areas, virus was not isolated. The serum of this patient obtained about two days before death had a neutralization index of 32 in the intracerebral test and of 10,000 in the intraperitoneal test against the Japanese B type of encephalitis virus isolated from the civilian patient on Okinawa.[6a] In the second fatal military case, which terminated on the seventh day of illness, the

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The work in Okinawa, Japan, and subsequently in the United States of America was performed while Dr. Sabin served as a Lieutenant Colonel, Medical Corps, with the Army Epidemiological Board, Preventive Medicine Service, Office of the Surgeon General, United States Army. The investigation was sponsored by the Commission on Neurotropic Virus Diseases, Army Epidemiological Board. Drs. W. McD. Hammon and W. C. Reeves, who came to Okinawa at the end of August 1945, continued with investigations of the outbreak after my departure, and I am greatly indebted to them for many observations.

I wish to express my indebtedness and thanks to Brig. Gen. S. Bayne-Jones, Deputy Chief, Preventive Medicine Service, Office of the Surgeon General, for this interesting assignment and for all the arrangements which made it possible to carry out this work and to Col. James B. Stapleton, Col. Walter B. Martin, Major W. G. Downs, Major W. L. Forman, Major A. S. Benenson and Major (later Lieut. Col.) Harvey G. Taylor of the Medical Corps, and Capt. Carl T. Parsons of the Sanitary Corps, Army of the United States, as well as to Lieut. Comdr. W. Kees, Lieut. Comdr. (later Comdr.) Leon Lewis and Lieut. Wm. E. Mosher of the Medical Corps, United States Naval Reserves, for their help during the course of the work on Okinawa.

In the preparation of this paper the attempt has not been made to review the voluminous Japanese literature on Japanese B encephalitis, or to compare the findings herein reported with those claimed by Japanese scientists. Most of the work on encephalitis in Japan has been published in the Japanese language, which is a distinct barrier, and furthermore, since 1941 their medical journals have had scant international circulation. For these reasons the bulk of their recent work on this disease has been unavailable for review at the time of writing this paper.

1. Iimura, Y.: An Epidemiological Observation of Encephalitis Lethargica in Japan, J. Pub. Health A. Japan **12**: 1-47, 1936.

2. Lewis, L.; Taylor, H. G.; Sorem, M. B.; Norcross, J. W., and Kindswatter, V. H.: Japanese B Encephalitis: Clinical Observations in an Outbreak on Okinawa Shima, to be published.

3. Casals, J., and Palacios, R.: The Complement Fixation Test in the Diagnosis of Virus Infections of the Central Nervous System, J. Exper. Med. **74**: 409-426, 1941.

4. Hodes, H. L.; Thomas, L., and Peck, J. L.: Cause of an Outbreak of Encephalitis Established by Means of Complement Fixation Tests, Proc. Soc. Exper. Biol. & Med. **60**: 220-225, 1945.

5. Sabin, A. B.: Outbreak of Encephalitis on Okinawa in 1945—Preliminary Report on Status as of 27 August 1945, J. Mil. Med. Pacific **1**: 79-84, 1945. Hodes, Thomas and Peck.[4]

6. Haymaker, W., and Sabin, A. B.: The Topography of Lesions in the Central Nervous System in a Case of Japanese B Encephalitis on Okinawa, Arch. Neurol. & Psychiat., to be published.

6a. It is believed that the presence of antibodies in the serum of this patient was probably not responsible for the failure to isolate the virus, because during the summer of 1946 R. W. Schlesinger and I isolated Japanese B encephalitis virus from the brain of a soldier who died in Korea on the fifth day of illness, and tests carried out by Capt. David Ginder, M.C., on the serum taken twelve hours before death revealed an intracerebral neutralization index of 10,000 (unpublished data).

brain of the patient was removed by another pathologist and delivered in solution of formaldehyde, precluding any virus studies. The brain was turned over to Lieut. Comdr. (later Comdr.) H. M. Zimmerman [7] of the Naval Medical Research Unit 2. He found widespread pathologic changes compatible with a diagnosis of encephalitis. The serum of this patient taken the day before death failed to neutralize the virus by the intracerebral route (neutralization index of 1) but exhibited definite, though irregular, neutralization by the intraperitoneal route.

Isolation of virus was attempted from the brain tissue of patients in 3 fatal native cases, with only 1 successful result.[7a] The patient from whose brain virus was isolated was a 13 year old girl who died on the fifth day of illness. The necropsy was not performed until ten hours after death, but specimens of tissue taken from the same areas of the brain and cord as those listed previously were immediately used for mouse inoculation. Portions of each piece used for preparation of this suspension were also sent in 50 per cent buffered glycerin [7b] and 50 per cent isotonic solution of sodium chloride to the laboratory of the Naval Medical Research Unit 2 in Guam, but no virus was obtained from the glycerinated material. The mice used for isolation of virus were brought from the United States and kept in screened cans. All 5 mice inoculated with the freshly prepared suspension of material from the human brain and cord exhibited signs of involvement of the central nervous system six or seven days after inoculation (table 1), and on passage of the mouse brain suspension the incubation period was reduced to four days. The bacteria-free agent thus transmitted in series was identified immunologically as a strain of the Japanese B encephalitis virus by both neutralization (table 2) and complement fixation (table 3) tests.[8]. The slight cross reaction of the Okinawa virus antigen with St. Louis encephalitis immune serum is in keeping with the known existence of a slight antigenic relationship between the Japanese B, St. Louis and West Nile viruses.[9] Immune serum against the virus of Russian spring-summer tick-borne encephalitis failed to neutralize even the smallest amounts of the Okinawa virus. The Okinawan strain of virus after only a few mouse brain passages proved to have the same degree of pathogenicity for mice (table 4) as the well established Nakayama strain of Japanese B virus after hundreds of mouse passages. While the Okinawa virus does not give rise to clinical signs of infection in intracerebrally inoculated rabbits and guinea pigs (aside from a possible transitory febrile reaction), it produces an antibody response in these animals suggestive of an inapparent infection.

TABLE 1.—*Isolation of Virus from Brain and Cord of Fatal Civilian Case and Passage in Mice*

Passage	Inoculum	Result of Mouse Inoculation *
I	Human brain and cord, 20 per cent suspension; 0.03 cc. intracerebrally, 1 cc. intraperitoneally	6, 6, 7, 7, 7
II	10 per cent mouse brain suspension; 0.03 cc. intracerebrally, 1 cc. intraperitoneally	4, 4, 4, 4, 4
III	1 per cent mouse brain; 0.03 cc. intracerebrally	4, 4, 4, 4

* Numbers in this column refer to days after inoculation when each mouse first exhibited signs of involvement of the central nervous system.

Test for Virus in Lung Tissue.—The patient from whose brain this virus was isolated also exhibited a bronchopneumonia post mortem, a complication not infrequently seen in fatal cases. Several pieces of affected lung tissue obtained from this patient at necropsy and preserved in 50 per cent buffered glycerin and 50 per cent isotonic solution of sodium chloride in the cold were tested for virus by mouse inoculation, but none was isolated.

Tests for Virus in Cerebrospinal Fluid and Blood.—Cerebrospinal fluid was obtained about twelve hours before death from the civilian patient whose brain yielded virus, and was immediately inoculated into 5 mice. Three of the mice remained well; 2 died on the twentieth and twenty-first days after inoculation. Passage of the brain of one of these mice did not yield any virus. In addition to this case, cerebrospinal fluid obtained from 4 military patients (2 on the fourth day, 1 on the fifth day and 1 on the eighth day of illness, just two days before death) was tested for virus with negative results; the diagnosis of encephalitis due to Japanese B virus was established in these instances by serologic tests. The cerebrospinal fluid obtained from 2 military patients, in whom the diagnosis was not confirmed by serologic tests, on the third and fourth days of illness also failed to yield any virus. The patients' blood was tested in 2 proved military cases on the third and fourth days of illness and in 2 civilian cases on the second day of illness with negative results.

SEROLOGIC DIAGNOSIS IN MILITARY CASES WITH SUSPECTED VIRUS INFECTION OF THE CENTRAL NERVOUS SYSTEM

The ideal goal in establishing by serologic methods that a given infection of the nervous system is caused by a specific virus has been to have a serum taken early enough in the disease to be without any antibodies for the virus and another serum taken at a later stage when such antibodies can be demonstrated unequivocally. At the time of this outbreak there was little or no information on the extent to which this goal may be achieved in patients with Japanese B type of encephalitis. Specimens of serum were obtained from all military patients as soon after onset as they were seen and at subsequent intervals whenever possible. The serums were stored in an ordinary refrigerator for periods of from one to three weeks before they were lyophilized from the frozen state in the laboratories of Naval Medical Research Unit 2 in Guam through the kind cooperation of Capt. (later Commodore) T. M. Rivers (MC), U.S.N.R., and Lieut. H. L. Hodes (MC), U.S.N.R. The lyophilized serums were transported to the United States in the cold and subsequently stored in an ordinary refrigerator until they were tested for both neutralizing and complement fixing antibodies.

An attempt to do complement fixation tests on Okinawa with lyophilized Japanese B virus antigen kindly supplied by Dr. J. Casals of the Rockefeller Institute was unsuccessful because the antigen was anticomplementary in the overnight refrigerator incubation, although it was not anticomplementary after the preliminary incubation in the water bath at 37 C. It was subsequently found that the anticomplementary factor in such reconstituted lyophilized antigens can be removed

7. Zimmerman, H. M.: The Pathology of Japanese B Encephalitis, Am. J. Path., to be published.

7a. This work was done in association with Lieut. Comdr. L. Thomas and Lieut. J. L. Peck of the Naval Medical Research Unit 2.

7b. The glycerin was buffered at PH 7.6 with phosphate buffer.

8. The identity of this same strain of virus subsequently was also confirmed in the laboratories of Naval Medical Research Unit 2 by a complement fixation test.[4]

9. Casals, J.: Immunological Relationships Among Central Nervous System Viruses, J. Exper. Med. **79:** 341-359, 1944.

by angle centrifugation at 3,500 to 5,000 revolutions per minute for one hour. The final results shown in tables 6 and 7, however, were those obtained with freshly prepared mouse brain antigen from the Okinawa strain of virus, because a comparative test showed such an antigen to be more sensitive (table 5). Incidentally, using the Swedish angle centrifuge, the antigen had to be centrifuged at about 3,500 revolutions per minute for at least three hours after repeated freezing and thawing Japanese B and St. Louis types of encephalitis antigens and the western type of equine encephalomyelitis antigen were used undiluted, and repeated titrations indicated that 8 to 16 units of antigen were contained in this dose. The results of each test were checked with either mouse or human immune serum of known titer. The serums were heated at 60 C. for twenty minutes. The neutralization tests were carried out by the intracerebral route with the use of a constant amount of

TABLE 2.—*Identification of Okinawa Virus as Japanese B by Intracerebral Neutralization Test with Known Rabbit Immune Serum (Nakayama Strain)*

Test No.	Date	Okinawa Virus Passage No.	Serum in Virus Mixtures	Final Dilution of Virus in Mixtures 10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}	10^{-7}	10^{-8}	10^{-9}	LD_{50}	Neutralization Index *
1	Aug. 14, 1945	II	Normal rabbit	4/4†	4/4	4/4	4/4	4/4	...	...	...	$10^{-6.5+}$	
			Japanese B immune	4/4	2/4	2/4	0/4	0/4	...	...	...	$10^{-8.5}$	1,000+
2	Nov. 17, 1945	VI	Normal rabbit	...	...	4/4	4/4	4/4	4/4	2/4	0/4	$10^{-8.0}$	
			Japanese B immune	4/4	4/4	3/4	1/4	0/4	0/4	...	...	$10^{-4.5}$	3,200

* Here and in table 8 the neutralization index = titer of virus in normal control serum divided by the titer of virus in test serum.
† Here and in table 8 the numerator = number of mice succumbed; denominator = number of mice inoculated.

TABLE 3.—*Identification of Okinawa Virus as Japanese B in Complement Fixation Test with Known Japanese B (Nakayama) and St. Louis Encephalitis (SLE) Virus Mouse Immune Serums*

Antigen	Jap. B Serum in Indicated Dilution * 1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	SLE Serum in Indicated Dilution 1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512
Okinawa virus	4†	4	4	4	4	4	4	2	4	±	0	0	..	..	..	..
SLE virus	2	1	1	0	..	..	..	..	4	4	4	4	3	2	1	±

* In this table and in tables 5, 9 and 11 the dilutions of serums indicated are those originally added to the system. The final dilutions, which others[4] prefer to indicate, would be four times greater than those indicated in this table.
† In this table and in tables 5, 9 and 11 the numerals indicate the extent of fixation, 4 representing complete fixation and 0, complete hemolysis, or no fixation.

TABLE 4.—*Infectivity of Okinawa Virus by Different Routes in Mice*

Passage No.	Route and Dose	Approximate Age or Weight of Mice Used	Dilutions of Virus 10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}	10^{-7}	10^{-8}	10^{-9}	LD_{50} Titer
V	Intracerebral (0.03 cc.)	3 wks.	7/7*	...	...	...	5/5	5/5	4/4	5/5	2/4	$10^{-9.0+}$
VI	Intracerebral (0.03 cc.)	3 wks.	...	...	...	...	...	5/5	3/3	3/5	4/5	$10^{-9.1+}$
	Intraperitoneal (0.3 cc.)	20 Gm. (8 wks.†)	5/5	3/5	3/5	0/5	0/5	...	...	...	...	$10^{-2.8}$
	Subcutaneous (0.3 cc.)	20 Gm. (8 wks.†)	2/5	0/5	0/5	1/5	1/5	...	...	...	...	$10^{-1.2}$

* Numerator = number of mice succumbed; denominator = number of mice inoculated.

TABLE 5.—*Comparative Sensitivity of Freshly Prepared (Okinawa Strain) and Lyophilized Japanese B Mouse Brain Antigen (Casals) for Complement Fixation Test*

Serum	Okinawa Virus-Fresh Antigen (16 Units) Original Dilution of Serum 1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	Lyophilized Antigen (8 Units) Original Dilution of Serum 1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	Controls WEE * + Serum 1:2	Saline + Serum 1:2
Mouse hyperimmune	..	..	..	4	4	4	4	2	..	..	..	4	4	4	4	±	0	0
Patient Wal.																		
5 days	3	2	2	±	..	..	..	..	0	0	0	0	..	..	..	..	0	0
11 days	4	4	3	2	..	..	..	..	3	2	1	0	..	..	..	..	0	0
18 days	4	4	4	3	..	..	..	..	4	4	2	0	..	..	..	..	±	0
Patient Gib.																		
7 days	4	3	1	±	..	..	..	..	4	4	±	0	..	..	..	..	±	±
14 days	4	4	3	2	..	..	..	..	4	4	3	±	..	..	..	..	0	0

* Western type equine encephalomyelitis. † Days after onset. See explanatory footnotes (* and †) in table 3.

before it was satisfactory for use. The final criterion for a good antigen was that in its presence the complement had to yield the same titer after storage in the refrigerator for eighteen hours as after incubation at 37 C. for one half hour in a water bath and, in each instance, a higher titer than in the control tubes containing isotonic solution of sodium chloride.[9a] The serum against varying amounts of the Okinawa strain of virus, incubating the mixtures at 37 C. for two hours.

The 10 patients with positive serologic tests for Japanese B encephalitis virus and the 2 patients who died are listed in order according to the date of onset in table 6, and the 12 patients in whom the results were entirely negative are similarly listed in table 7. The data in table 6 on serial specimens of serum, available on all but the 2 fatal cases (2 and 8) and case 12, indicate a sufficient change in titer in either the complement-fixing antibody or the neutralizing antibody to permit a specific diagnosis of encephalitis due to Japanese B virus

9a. During the summer of 1946 the complement fixation test was used extensively in the Tokyo laboratory of the Commission on Virus and Rickettsial Diseases. I found that the second requirement in my criteria for a good antigen, namely, that the complement titer in the presence of antigen be higher than in the control tubes containing isotonic solution of sodium chloride, was frequently unobtainable, and yet such antigen could be used satisfactorily.

infection. The data in table 6 furthermore illustrate the following important points:

1. The neutralizing antibody, as determined by the intracerebral test, was equivocally or distinctly positive as early as three to four days after onset (i. e., fourth or fifth day of disease), indicating how difficult it is, by the use of this test, to achieve the desired goal of having an early specimen without antibody followed by a later one in which antibody is definitely present.

2. An approxmately tenfold or greater increase in the intracerebral neutralization index was demonstrable in 5 of the cases (3, 4, 6, 7 and 10) with a sufficient number of convalescent specimens, but it should be noted that this increase may not occur until from three to five weeks after onset, and perhaps even later.

3. Complement-fixing antibody in low titer, i. e., 1 : 2 to 1 : 8 the original dilution of the serum, was also found as early as from two to seven days after onset in 6 of 9 patients.

4. An increase in complement-fixing antibody titer occurred in each of the 9 patients on whom serial specimens were available, but again it should be observed that as long as five weeks may be required before the antibody either appears or increases to satisfactory titer (see especially cases 3 and 4).

5. Early in the course of the disease (for as long as three weeks in case 3) the patient's serum may have neutralizing antibody but no complement-fixing antibody (cases 2, 3, 4 and 5). In 1 patient (case 10) only was the reverse true—the serum obtained two days after onset had no neutralizing antibody but fixed complement in a dilution of 1 : 4, specifically with the Japanese B antigen.

6. Cross reaction with the St. Louis encephalitis virus antigen in the complement fixation test was observed in only 1 patient (case 1) forty-eight days after onset when the serum had a titer of 1 : 32 with the Japanese B antigen and 1 : 4 with the St. Louis virus. Since an earlier serum (seventeen days after onset) from the same patient gave a negative reaction to the St. Louis antigen, it would appear that the low titer of the positive reaction occurring forty-eight days after onset represents a late response to the common antigen possessed by these two viruses.[9]

TABLE 6.—*Military Patients with Positive Serologic Tests for Japanese B Encephalitis Virus*

Patient No.	Patient Name	Date of Onset, 1945	Days After Onset Serum Obtained	Intracerebral Neutralization Index Jap. B	Complement Fixation Jap. B	Complement Fixation SLE	Complement Fixation WEE	Chief Clinical Manifestations
1	Huf.	July 18	5	.....	(1:2)*	..	..	8 day fever, confused and restless, slurred speech, tremors, decided nuchal rigidity, hyperreflexia; WBC 8,750; CSF 104, 61 cells
			17	100; 50	1:16; (1:32)*	0	0	
			48	80	1:32	1:4	0	
2	Tru.	July 28	7	32 [10,000 in intraperitoneal test]	0	..	0	Fever, lethargy to coma, generalized rigidity, convulsions; WBC 10,650; CSF 192 cells. Died tenth day; encephalitic lesions found
3	Poo.	July 31	4	63	0	..	0	8 day fever, vomiting; drowsy, nuchal rigidity, hyperactive deep reflexes, tremors, WBC 27,650; CSF 660, 463, 43 cells
			15	63	0	..	0	
			21	500+	0	0	0	
			35	.....	1:8; 1:16	0	0	
4	Row.	Aug. 1	3	40	0	0	0	7 day fever, drowsy, slurred speech, tremors, nuchal rigidity, reflex changes; WBC 18,150; CSF 66, 82, 15 cells
			14	20	1:4	..	0	
			21	63	1:4	..	0	
			34	2,000+	1:32	0	0	
5	Tha.	Aug. 2	4	20	0	..	0	15 day fever, extreme lethargy, athetoid movements, tremors, nuchal and spinal rigidity, bronchopneumonia; WBC 17,850; CSF 284, 70, 8 cells; residual masklike facies and personality change
			14	125	1:32	0	0	
			21	100	1:16	..	0	
6	Wal.	Aug. 5	5	10; 40	1:8	0	0	11 day fever, lethargy, athetoid movements, nuchal rigidity; WBC 15,850; CSF 22, 112 cells
			11	20	1:16	..	0	
			18	300+	1:16	0	0	
7	Gib.	Aug. 8	7	16; 32	1:4	0	0	10 day fever, lethargic, confused tremors, poor coordination, nuchal rigidity; WBC 14,200; CSF 508, 24 cells
			14	200+	1:16	0	0	
8	Rya.	Aug. 11	5	1 [Irregular, but definite neutralization in intraperitoneal test]	0	..	0	Fever, disorientation and confusion followed by coma, aphasia, spastic paralysis of right upper extremity with analgesis in lower ⅔ followed by generalized spasticity, dissociated eye movements, trismus, positive great toe reflexes and ankle clonus; WBC 14,650; CSF 130, 68 cells. Died sixth day; encephalitic lesions found
9	Tho.	Aug. 15	7	320+?	1:2	0	0	7 day fever, lethargy, coarse tremors, nuchal and spinal rigidity; WBC 14,100; CSF 41, 62 cells
			14	80	1:8	..	0	
10	Joh. R.	Aug. 21	2	3	1:4	0	0	Fever, vomiting, drowsiness, tremors, nuchal and spinal rigidity; WBC 16,100; CSF 645 cells
			17	320	....	..	..	
			23	.....	[1:64]†			
11	Vin.	Aug. 21	3	20	1:4	..	0	Fever, confused, lethargic, "petit mal convulsions," "does not speak or comprehend speech," trismus, nuchal rigidity; WBC 21,200; CSF 400 cells
			7		(1:32)*			
			25		(1:32)*			
12‡	Hut.	Aug. 27	18	100	1:16; (1:32)*	..	0	Fever, nuchal rigidity, drowsiness, bilateral horizontal nystagmus; WBC 16,500; CSF 305 cells

These abbreviations, notes and footnotes (* and †) also apply to table 7.

Abbreviations: Jap. B., Japanese encephalitis virus mouse brain antigen; SLE, St. Louis encephalitis virus mouse brain antigen; WEE, Western equine encephalitis virus mouse brain antigen; WBC, leukocytes per cubic millimeter of blood, and CSF, cerebrospinal fluid cell count. The numbers of cells refer only to white cells.

Notes: The complement fixation titers represent the original dilutions of serum which gave 2+ or better fixation; 0 means that the 1:2 dilution of serum gave no fixation.

Where two titers separated by a semicolon are given, they represent the results of different tests. Where two or more figures separated by commas are given for CSF they represent the cerebrospinal fluid cell counts at different times.

* The complement fixation titers in parenthesis were those obtained by the Naval Medical Research Unit 2 investigators,[4] and I am indebted to Lieut. John L. Peck (MC) U. S. N. R., for forwarding some of these data as well as the serum on patient 12. Although this last serum was sent in the lyophilized state, unrefrigerated, by regular air mail from Guam to Cincinnati, there was only a twofold difference in the complement fixation titers obtained in the two laboratories.

† This serum was tested in Dr. W. McD. Hammon's laboratory, and I am indebted to him for the result.

‡ Patient 12 received two doses of mouse brain vaccine on Aug. 11 and 14, 1945, which may be responsible for his serologic response rather than infection with Japanese B virus.

7. It is noteworthy that all patients shown in table 6 had severe or moderately severe clinical manifestations of encephalitis, except case 12. The last mentioned patient was the only one in this group to receive Japanese B encephalitis mouse brain vaccine. He had the first dose on August 11 and the second dose on August

A number of questions of practical importance are raised by the serologic observations shown in table 6. Since it has been customary to regard intracerebral neutralization indexes in the range of 10 to 49 (especially in work with the virus of the Western type of equine encephalomyelitis, which gives rise to high titers

TABLE 7.—*Military Patients with Negative Serologic Tests for Japanese B Encephalitis Virus*

Patient No.	Patient Name	Date of Onset, 1945	Days After Onset Serum Obtained	Intracerebral Neutralization Index Jap. B	Complement Fixation Jap. B	Complement Fixation SLE	Complement Fixation WEE	Chief Clinical Manifestations
1	Leh.	July 3	32	−2	AC	AC	AC	Low grade febrile illness followed by limp of left leg and tenderness over sciatic nerve with absent left ankle jerk; WBC 10,600; CSF 22 cells; Pandy trace
2	Car.	July 11	24	4	0	0	0	4 day low grade fever followed by severe pain over left sciatic nerve and loss of left ankle jerk; WBC 5,300; CSF 42 cells; Pandy +++
3	Jor.	July 16	25	2	0	0	0	Low grade recurrent fever with nuchal and spinal rigidity followed by paralysis of left leg, complete foot drop, and pain over course of left sciatic nerve; WBC 11,400; CSF 92 cells; Pandy negative
4	Cop.	July 16	27	1	AC	AC	AC	Signs and symptoms of "aseptic meningitis" only record
5	Mad.	July 21	16	3	0	0	0	Transitory convulsions and nuchal rigidity while under treatment for amebiasis; CSF 3 cells
			35	1	0	0	0	
6	Joh. K.	July 31	23	−3	0	0	0	Seen after 4 day fever, presenting decided emotional disturbance, confusion, masked facies, pronounced intention tremor, generalized muscular weakness, absent knee jerks and abdominal reflexes, positive left Oppenheim sign; no nuchal or spinal rigidity; WBC 4,900; CSF normal
7	Was.	Aug. 1	14	8	...	...	...	Onset with headache, diplopia and weakness after 3 days of nausea and vomiting; great nuchal and spinal rigidity, nystagmus, bilateral positive Oppenheim sign. Fever observed on thirteenth day, no previous record; WBC 6,500; CSF 145 cells
			22	10 (?)	AC	AC	AC	
			28	1	0	0	0	
8	Har.	Aug. 2	4	1	0	...	0	7 day fever with slight nuchal rigidity and reflex changes; WBC 11,300; CSF 19, 36 cells
			13	−3				
			33	−3	0	0	0	
9	Mue.	Aug. 2	2	3	...	...	...	4 day low grade fever with moderate nuchal rigidity and absent abdominal reflexes; WBC 8,250; CSF 91 cells, Pandy trace; 31 cells, Pandy +++; 5 cells, Pandy negative
			13	3				
			21	3				
			33	1	0	0	0	
10	Mos.	Aug. 10	6	...	0	0	0	Severe encephalitis with fever, mental confusion and lethargy followed by coma and convulsions, variable reflexes and positive great toe reflexes, nuchal rigidity; WBC 8,400; CSF 98 cells. Afebrile eleventh day, but lethargy and mental confusion persisted; transferred to neuropsychiatric service because of persistent decided psychic disturbance
			14	1				
			25	1	(0)*, AC	AC	AC	
11	Moo.	Aug. 10	13	−3	...	...	...	Arrived at Okinawa from Luzon, P. I., 2 days before onset. Mild illness with low grade fever, uncontrollable "jitteriness" and tremor, absent deep reflexes and suggestive "sciatic neuritis." CSF 3, 37, 12 cells with change from normal to increased protein (Pandy +++); WBC 12,450
			19	−2	(0)†			
			34	[neg]†	(0)†	(0)†		
12‡	Duk.	Aug. 14	7	−3	1:8	1:4	1:2	2 days after first dose of mouse brain vaccine there developed low grade fever and malaise lasting 6 days. August 20 suggestive "meningismus" led to lumbar puncture with finding of 160 cells and Pandy +++; August 22, no neck or spine stiffness or pain and otherwise well; September 3, CSF 71 cells and Pandy trace; neurologic tests negative throughout
			15	−3				
			21	−1	0	1:2	0	

For key to abbreviations, notes and footnotes * and † see table 6.
AC, anticomplementary.
‡ The complement fixation results in patient 12 are perhaps best accounted for on the basis of the mouse brain vaccine he received.

TABLE 8.—*Significance of a Low Intracerebral Neutralization Index Observed Early (Three Days) After Onset of Japanese B Encephalitis in Man in Terms of the Protective Capacity of the Serum by the Intraperitoneal Route*

Okinawa Strain of Japanese B Encephalitis

Type of Test	Approximate Age and Weight of Mice Used	Serum	Final Dilution of Virus in Mixtures 10^{-3}	10^{-4}	10^{-5}	10^{-6}	10^{-7}	10^{-8}	10^{-9}	LD_{50} Titer	Neutralization Index
Intracerebral (0.03 cc.)	3 wks. (10 Gm.)	Normal rabbit control	...	...	4/4	4/4	3/4	2/4	1/4	$10^{-8.0}$	..
		Patient Vin.	...	...	4/4	4/4	1/4	0/4	...	$10^{-6.7}$	20
Intraperitoneal (0.1 cc.)	2 wks. (6 to 7 Gm.)	Normal rabbit control	4/4	4/4	3/4	3/4	3/4	3/4	...	$10^{-8.2+?}$	..
		Patient Vin.	0/4	0/4	0/4	0/4	0/4	...	...	$10^{-2.3-?}$	500,000+?

Note: The intracerebral and intraperitoneal tests were carried out simultaneously, the same serum-virus mixtures being used.
See footnotes of table 2.

14, seventeen and fourteen days, respectively, before onset. In view of the good complement-fixing titer exhibited by this patient, it is probable that his clinical manifestations were caused by infection with Japanese B encephalitis virus, although this is not certain because only one specimen of serum taken seventeen days after onset was available for test.[9b]

of antibody) as equivocal, it appeared desirable to determine by the intraperitoneal test the significance of intracerebral indexes of 20 to 40 against Japanese B encephalitis virus observed a few days after onset of clinical manifestations of the disease in man. The results of such a test on the serum obtained three days after onset, from a patient (11 in table 6) with severe encephalitis are shown in table 8 and indicate that the intracerebral neutralization index of 20 was equivalent to an intraperitoneal index of at least 500,000. This means that 0.05 cc. of this patient's serum on the fourth day of

9b. Control studies on healthy vaccinated military personnel carried out during the summer of 1946 indicated that a few persons may develop specific complement-fixing titers of this magnitude in response to vaccination. Therefore a definite diagnosis of infection with Japanese B virus cannot be made in case 12.

the disease was capable of neutralizing at least 500,000 mouse LD_{50} doses [10] of Japanese B encephalitis virus by a peripheral route. This would also suggest (*a*) that one is not likely to isolate Japanese B type of encephalitis virus from the blood of patients even a few days after onset and (*b*) that it is doubtful whether or not the circulating antibody titer can be raised sufficiently to make much difference by the amounts of hyperimmune serum that it may be practical to administer. In regard to the best type of test to use for diagnosis, the data in tables 6 and 7 indicate that there was not a single instance of discrepancy between the final results obtained in a given case by the neutralization and complement fixation tests. The complement fixation test carried out with suitably standardized antigens and with amounts of complement not in excess of 2 units (see table 9), as measured in the presence of the antigens used, is superior to the neutralization test for the practical purpose of determining the type of virus infection in a given case, not only because it is more rapid and does not require any animals but especially because it lends itself more readily to quantitative measurement of the antibody, which is absolutely necessary for the demonstration of a rising titer. Since the neutralizing antibody appears extremely early after onset in human

TABLE 9.—*Influence of Small Excess of Complement on Sensitivity of Fixation in Mixtures of Human Serums and Japanese B Encephalitis Antigen*

	1.7 to 2 Units of Complement					2.5 Units of Complement				
	Original Serum Dilution					Original Serum Dilution				
Human Serum	1:2	1:4	1:8	1:16	1:32	1:2	1:4	1:8	1:16	1:32
Row. 3 days after onset	1	0	0	..	..	0	0	0	0	
14 days after onset	4	2	±	..	..	0	0	0	0	0
21 days after onset ..	3	±	0	..	..	0	0	0	0	0
34 days after onset ..	4	4	4	2	4	4	2	0	0	
Sid.	4	2	1	0	0	..	0	0	0	0
Gron.	4	4	2	..	..	3	±	0	0	0
Str.	4	4	3	1	..	2	0	0	0	

See explanatory footnotes (* and †) in table 3.

beings, it is obvious that for diagnostic purposes this antibody must also be determined quantitatively. The intraperitoneal test, which is most sensitive, is not practical because mice older than fourteen to fifteen days cannot be used. The method of testing multiple dilutions of serum against a fixed amount of virus does not appear to me to be practical for the encephalitis viruses because unless exceedingly small amounts of virus are used (i. e., five to ten LD_{50} doses) serums with high titers in the undiluted state lose their protective capacity on slight dilution; furthermore, it is rather precarious to attempt to work in the five to ten LD_{50} range because (*a*) the mice may succumb irregularly and (*b*) in attempting to hit this dose one may either overshoot the mark and use fifty or more LD_{50} doses, which is too much virus for a satisfactory test, or undershoot the mark and have too many control mice survive. For this reason I prefer, for routine purposes, to use the intracerebral test with undiluted serum against three tenfold dilutions of virus and to use simultaneous titration of the virus in each test. Thus, if the virus is expected to have a titer of 10^{-8} to $10^{-8.5}$, the final virus dilutions tested with the unknown serums are 10^{-6}, 10^{-7} and 10^{-8}, while the virus titration is carried out with normal, undiluted, heated rabbit serum in final virus dilutions of 10^{-6}, 10^{-7}, 10^{-8} and 10^{-9}; the use of 4 mice per dilution permits the use of a single mouse box (25 by 18 by 14 cm.) for each serum without undesirable overcrowding. The results obtained with many human and other serums have led me to regard an approximately tenfold or greater increase in the neutralization index as a significant rise in antibody when the value for the earliest serum tested is in the range of 10 to 50 or more; however, when the serum obtained at the acute stage of the disease is negative with an index of less than 10, an increase in a later specimen to an index of 20 to 40 is suggestive of a rising titer and an index of 50 or more may be regarded as indicating the definite appearance of antibody in a patient who originally had none demonstrable by the intracerebral test.

Among the 12 patients with negative serologic tests presented in table 7, a definite clinical diagnosis of encephalitis is possible only in patient 10, who was so ill during the acute phase of the disease that a fatal outcome was expected; but while he recovered physically his mental status was such that he had to be transferred to the neuropsychiatric service. Although the last specimen available on this patient was obtained only twenty-five days after onset, the tests for Japanese B encephalitis antibody were so unequivocally negative that either this may represent a case of unusually late development of antibody which was missed, or the infection was not caused by the Japanese B type of encephalitis virus. All the other patients either had mild, transitory illnesses or had something atypical in their history, but it was natural to suspect that their disease was possibly caused by Japanese B type of encephalitis virus during the course of an outbreak. Subsequent to my departure from Okinawa, Dr. W. McD. Hammon observed and obtained serums from military patients in 14 additional cases of relatively mild illnesses which were suggestive of some form of virus infection of the nervous system; however, only 1 of the 14 had any demonstrable titer of antibody against the Japanese B type of encephalitis virus (personal communication from Dr. Hammon), and because this 1 had received two doses of vaccine six and four days, respectively, before onset, it is not certain whether his antibody was due to infection or vaccination. It seems to me especially noteworthy that in this group of cases it was not possible to prove infection by the Japanese B encephalitis virus in patients who exhibited only nuchal and spinal rigidity, transitory reflex changes and pleocytosis as the only manifestations indicative of involvement of the nervous system—the syndrome ordinarily described as aseptic or lymphocytic meningitis, and, when it is seen during the course of a poliomyelitis epidemic, as nonparalytic poliomyelitis. Although there is good evidence, based on isolation of virus from the stools, that such a syndrome can actually represent nonparalytic poliomyelitis, there was no evidence that during this outbreak it represented a mild form of encephalitis due to Japanese B virus. However, in patients who exhibited this syndrome plus a certain amount of drowsiness, lethargy and mental confusion positive serologic evidence for infection with the Japanese encephalitis virus was obtained.

The infections of the 4 patients (1, 2, 3 and 11) exhibiting severe pain along the course of the sciatic nerves and weakness or actual paralysis of the lower extremities associated with pleocytosis were considered clinically as possible "radicular types of encephalitis" (a textbook syndrome) but may actually have been instances of poliomyelitis. Poliomyelitis perhaps might also have been the more correct diagnosis in case 7, despite the diplopia and bilateral positive Oppenheim

10. Mouse LD_{50} doses; LD_{50} is that dose having a lethal effect on 50 per cent of animals used in experiments.

signs, for this patient as well as 1, 2, 3 and 11, just mentioned, at no time exhibited any lethargy or mental confusion.

CLINICAL MANIFESTATIONS IN SEROLOGICALLY POSITIVE MILITARY CASES

The adjective "lethargica" commonly reserved for von Economo's (type A) encephalitis is most applicable to the disease as it was seen in the American military patients in whom a positive diagnosis of encephalitis due to Japanese B virus was ultimately established by serologic methods. Drowsiness, lethargy, mental confusion and disorientation, and semicoma or complete coma in the more severe cases, occurring in association with high fever, nuchal and spinal rigidity, leukocytosis and pleocytosis constituted the most important manifestations for diagnostic purposes. The onset was usually sudden with fever and extremely severe headache, although the mental confusion and lethargy and even the stiffness of the neck and spine (the latter easily demonstrated by the kiss-the-knee test) frequently did not appear until several days later. Actual paralysis was seen only once in this group of patients, and that in a case with early fatal termination. True convulsions were also seen only in the 2 fatal cases. Dissociated eye movements which were not infrequently seen in the native children with the disease [2] were observed in only 1 patient, again in a case with a fatal termination. The pupils, however, were usually contracted and reacted poorly to light. Diplopia did not occur in this group.

A milky, sticky exudate was often seen about the eyes. Athetosis, incoordination and tremor of the hands were not uncommon, and difficulty in writing could be easily demonstrated. Difficulties in speech ranged from slurring to complete aphasia. The reflexes were variable. The abdominal reflexes were usually absent, while the tendon reflexes were most often exaggerated, although occasionally they might become diminished or disappear. Positive great toe reflexes were uncommon.

The fever was high and lasted for from seven to eleven days except in 1 patient in whom a bronchopneumonia also developed. The temperature and pulse curves are illustrated in the charts of 4 patients (charts 1 to 4). The remittent type of temperature curve may perhaps be due to the administration of acetylsalicylic acid, but that is not certain. A relative bradycardia was invariably present during the febrile phase, and a pulse rate of 50 to 60 was common after defervescence. A leukocytosis in the range of 10,000 to 25,000 with a definite increase in the number of mature and immature neutrophils was the rule in these patients and was also found regularly in the native cases by Lieut. John W. Norcross (MC), U.S.N.R.[2] The cerebrospinal fluid was clear, under normal or slightly increased pressure, and pleocytosis, ranging from 22 to 660 white cells per cubic millimeter in the first specimen examined was present in all patients of this group. The cells were predominantly mononuclear, although in 1 acutely ill patient (11 in table 6) most of the 400 cells seen on the third day of the disease were reported as polymorphonuclear. The protein concentration was normal or slightly increased early in the disease, while during convalescence a 3 or 4 plus Pandy reaction was not uncommon. Pellicle formation was observed in at least 1 patient (5 in table 6) on the fifth day of the disease.

Convalescence was slow, and lethargy, incoordination, tremors and "nervousness" usually persisted for weeks

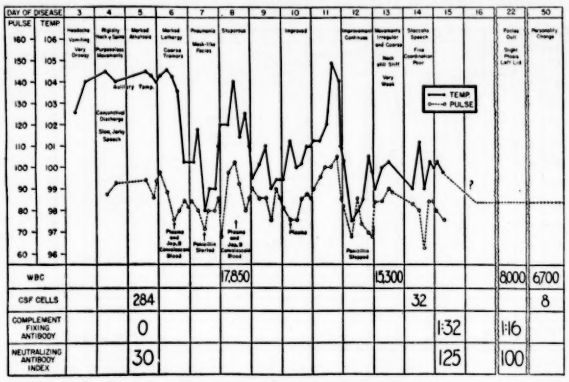

Chart 1.—Japanese B encephalitis in American soldier, M. O. T., aged 29, on Okinawa in 1945.

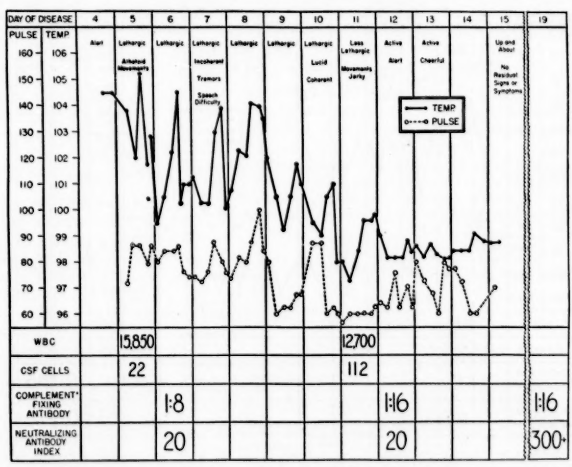

Chart 2.—Japanese B encephalitis in American soldier, R. C. W., aged 23, on Okinawa in 1945.

after defervescence. The condition of at least 1 patient (5 in table 6) was still rated as poor seven weeks after onset, with masklike facies, somnolence, hyperirritability and distinct personality change manifested by stoicism, perverse obstinacy, moroseness, disinclination to talk and urination on the floor of the ward. I have had an opportunity to see some of these patients for only short periods during the acute phase of the infection, and I am indebted to Major Wiley L. Forman, Major Arthur

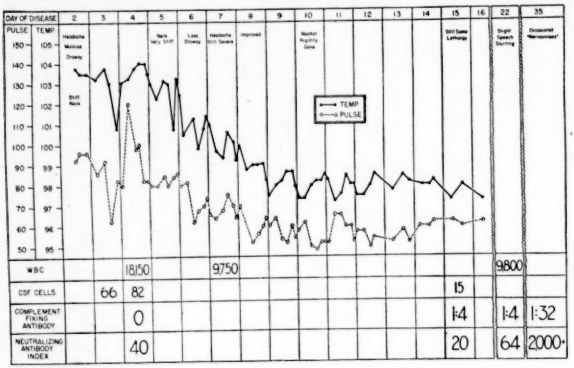

Chart 3.—Japanese B encephalitis in American soldier, G. L. R., on Okinawa in 1945.

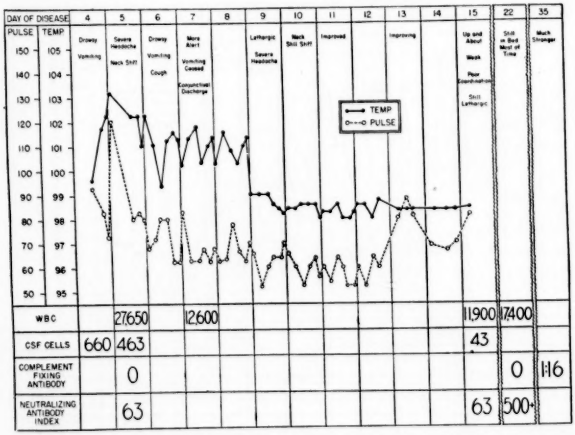

Chart 4.—Japanese B encephalitis in American soldier, R. N. P., on Okinawa in 1945.

H. Rosenblum and Capt. Charles P. C. Logsdon of the Army Medical Corps and to Lieut. Comdr. W. Kees (MC), U.S.N.R., for the clinical observations and notes on these patients which they were good enough to supply.

EPIDEMIOLOGIC ASPECTS

Endemicity of Encephalitis on Okinawa.—The story related by native physicians suggested that "summer" encephalitis was endemic on the island, occurring yearly with an incidence of usually about 5 infections per 10,000 population and on a few occasions 17 per 10,000, predominantly in the younger age groups. To check on this hypothesis, blood was collected from 60 natives without history of encephalitis. The ages represented ranged from 1 (Okinawan 2, because they are regarded as 1 year old at birth) to 61. The results of intracerebral neutralization tests, using the Okinawa strain of Japanese encephalitis virus, on 57 of these serums shown in table 10 indicate an increasing incidence of antibodies with age. The presence of antibodies in 90 per cent of the 30 persons who were 20 years of age and older and in 55 per cent of 11 persons in the 10 to 19 year age group not only indicates how widespread infection with this virus has been on the island but also explains why, in recent years at least, the clinically manifest disease has been seen predominantly in children. The complete negative results in the 16 children of the 1 to 9 year age group are either fortuitous (Lieut. J. L. Peck informed me that a few positive results were obtained in this age group in similar tests carried out in the laboratory of Naval Medical Research Unit 2) or an indication that the incidence of infection has been lower in recent years. It was of interest to determine to what extent serums exhibiting low, intermediate and high neutralization indexes may also contain complement-fixing antibodies, and the results of such tests on the serums of 12 natives, 10 to 57 years of age, without history of encephalitis, are shown in table 11. Of the 10 serums which were not anticomplementary and did not cross with the control Western type equine encephalomyelitis antigen, only 1 gave significant fixation in a dilution of 1 : 8. The most probable explanation for this observation, in view of the data on recent convalescents shown in table 6, is that the complement-fixing antibody for Japanese B type of encephalitis virus antigen disappears at a certain, as yet unknown, period after infection (at least in most instances), while the neutralizing antibody persists. The presence of a high titer of complement-fixing antibody may thus be indicative of recent infection. This fact might be utilized as an epidemiologic tool to determine recent infection rates in certain areas, although the interpretation of the data would hinge on how long the complement-fixing antibody persists.

Vertebrate Hosts Other than Man.—The work of Hammon and his associates,[10a] as well as the isolation in the last few years first of St. Louis encephalitis virus from mites, Dermanyssus gallinae, taken from chickens

10a. Hammon, W. M., and Reeves, W. C.: Recent Advances in the Epidemiology of the Arthropod-Borne Virus Encephalitides Including Certain Exotic Types, Am. J. Pub. Health **35**: 994-1004, 1945.

possessing neutralizing antibodies against this virus,[11] and then of Western type equine encephalomyelitis virus[12] from the same species of mites taken from chickens during an outbreak of the disease in Texas, followed by the demonstration that this type of mite may serve as a true reservoir of the virus by virtue of transovarian passage from one generation of mites to another,[13] made it desirable to determine what vertebrate hosts are infected by the Japanese B virus on Okinawa, and especially whether or not chickens were involved. Although the chicken population on Okinawa and adjacent islands had been greatly reduced by the time the outbreak of encephalitis appeared, a certain number of them could always be found in any native village. The other domestic animals were horses, goats, pigs and, infrequently, a cow, which shared the same living quarters with the human beings. I caught only a fleeting glance at two dogs and a single cat during my entire stay on Okinawa; rats and shrews were plentiful. The blood of 15 horses, 10 goats, 1 cow and 12 chickens from either Heanza or Okinawa was tested for neutralizing antibodies against the Okinawa strain of Japanese B type encephalitis virus. The results shown in table 12 indicate that all 15 Heanza or Okinawa horses (but none of 10 American horses tested simultaneously), the 1 Heanza cow and 3 of the 10 Okinawa goats possessed good neutralizing antibodies, while none were found in any of the 12 Heanza or Okinawa chickens taken from areas where multiple human cases of encephalitis had occurred. Furthermore, either few or no mites could be found on these and other chickens in the encephalitis zones. Another group of Okinawa horses tested by Hodes, Thomas and Peck[14] were also found to contain complement-fixing antibodies for the Japanese B virus. The absence of antibodies in the available chickens and the great scarcity of other birds on Okinawa make one wonder whether some mammalian host such as the horse, goat or cow, or the rats and shrews which unfortunately (for lack of live traps) were not tested, may not play the same role for Japanese B encephalitis on Okinawa as has been suggested for the chicken in the case of St. Louis type encephalitis and Western type equine encephalomyelitis in the United States.[10a] It is noteworthy, however, that Hammon and Reeves[10a] recently reported outbreaks of the two last mentioned diseases in Texas and Nebraska in which chickens could not be implicated as the intermediate hosts from which the mosquitoes derive their initial infection and suggested that the vertebrate hosts, and possibly the invertebrate vectors, may vary from one area to another. Mites or related ectoparasites were not found on the Okinawan horses, goats or pigs by Capt. Carl T. Parsons, Sanitary Corps, who was the entomologic associate in this work. He did find a large number of mites on the single available Heanza dove, but inoculation of mice with 130 of these mites yielded no virus.

Insect Vectors.—Both Japanese[16] and Russian[17] investigators have reported the isolation of Japanese B encephalitis virus from Culex tritaeniorhynchus and Culex pipiens var. pallens mosquitoes caught in nature. These mosquitoes as well as Aedes togoi, Aedes albopictus, Aedes japonicus[18] and Culex quinquefasciatus,

TABLE 10.—*Neutralizing Antibodies for Japanese B Encephalitis (Okinawa Strain) in Serums of Okinawans of Various Ages Without History of Encephalitis*

Age Group *	No. Positive	% Positive	Intracerebral Neutralization Indexes of Individual Serums
1 to 9	0/16	0	−2, −1, −1, 1, 1, 2, 2, 2, 2, 2, 4, 5:0, 8:5, 10:5, 10:5 †
10 to 19	6/11	55	−2,2, 2, 3, 10+:13 ‡, 50, 400, 1,000, 3,000+, 5,000+, 5,000+
20 to 29	9/10	90	3, 100, 500, 500, 1,000, 3,000+, 3,000+, 4,000+ 5,000+, 5,000+
30 to 61	18/20	90	2, 3, 63, 63, 63, 200, 200, 200+, 400, 630, 630, 3,200+, 3,200+, 4,000, 4,000, 4,000, 6,300+, 6,300+, 6,300+, 6,300+

* The indicated ages are in accord with American and European usage and 1 year less than those given by the Okinawans, who are regarded as being 1 year old at birth.

† 10:5 indicates that two tests were performed and that the neutralization index in one was 10 and in the other 5.

‡ 10+:13 in this case was counted as negative, but the result may be regarded as equivocal.

TABLE 11.—*Correlation Between Neutralizing and Complement-Fixing Antibodies in Serums of Okinawa Natives Without History of Encephalitis*

Serum Used Age of Donor Years	Intracerebral Neutralization Index	Japanese B Antigen + Serum in Indicated Dilution: Und.	1:2	1:4	1:8	1:16	WEE Control + Serum Diluted: Und.	1:2	Saline + Serum Diluted: 1:4	Und.	1:2
39	63	0	0	0	0	0	0	..	0	0	0
54	63	..	0	0	0	0	..	0	..	..	0
31	400	..	1	±	±	±	..	1	..	..	0
15	400	4	2	±	0	..	3	2	..	2	2
10	1,600	0	0	0	0	..	0	0	..	0	0
14	3,000	..	0	0	0	0	..	0	..	..	0
29	4,000+	..	0	0	0	0	..	0	0	..	0
47	4,000+	..	0	0	0	0	..	0	0	..	0
20	5,000+	..	4	4	2	0	..	0	0	..	0
25	5,000+	..	4	4	2	1	..	2	..	..	0
50	6,300+	..	±	0	0	0	..	0	0	..	0
57	6,300+	2	±	0	0	0	0	0	..	0	0
Recent convalescent control 48 days after onset	80	..	4	4	4	4	..	0	..	..	0

Note: 1.7 units of complement and 16 units of antigen used in this test. See explanatory footnotes (* and †) in table 3.

TABLE 12.—*Neutralizing Antibodies for Japanese B Encephalitis (Okinawa Strain) in Serums of Certain Ryukyu Animals and in Ten American Horses*

Animal Serums Tested	No Positive	% Positive	Intracerebral Neutralization Indexes
Heanza horses	12/12	100	100, 160+, 630+, 630+; all others 1,000+
Okinawa horses	3/3	100	100+, 160+, 160
United States horses *	0/12	0	1, 1, 1, 1, 1, 1, 1, 1, 2, 10:30 †
Okinawa goats	3/10	30	125+, 200+, 1,000+ 1, 1, 3, 4, 4, 20, 13
Haenza cow	1/1	...	100
Haenza and Okinawa chickens	0/12	0	1, 1, 1, 1, 1, 1, 1, 1, 3, 8, 8, 16—?

* These horses were quartered in the stables of the Sharp & Dohme, Inc., laboratories in Pennsylvania, and I am indebted to Dr. Bettylee Hampil for sending me their blood.

† 10:30 indicates that two tests were performed and that the neutralization index in one was 10 and in the other 30.

11. Smith, M. G.; Blattner, R. J., and Heys, F. M.: The Isolation of the St. Louis Virus from Chicken Mites (Dermanyssus gallinae) in Nature, Science **100:** 362-363, 1944.

12. Sulkin, S. E.: Recovery of Equine Encephalomyelitis Virus (Western Type) from Chicken Mites, Science **101:** 381-383, 1945.

13. Smith, M. G.; Blattner, R. J., and Heys, F. M.: Further Isolation of St. Louis Encephalitis Virus: Congenital Transfer of Virus in Chicken Mites (Dermanyssus gallinae), Proc. Soc. Exper. Biol. & Med. **59:** 136-138, 1945.

14. Hodes, H. L.; Thomas, L., and Peck, J. L.: Complement-Fixing and Neutralizing Antibodies Against Japanese B Virus in the Sera of Okinawan Horses, Science **103:** 357-359, 1946.

15. Deleted by author.

16. Inada, R.: Compte rendu des recherches sur l'encéphalite épidémique au Japon, Bull. Office internat. d'hyg. pub. **29:** 1389-1401, 1937.

17. Petrischeva, P. A., and Shubladse, A. K.: The Vectors of the Autumn Encephalitis in the Maritime District, Arch. Dis. Sc. Biol. **59:** 72-77, 1940.

18. Mitamura, T.; Kitaoka, M.; Mori, K.; Okubo, K., and Tenjin, T.: Ueber den Infektionsmodus der japanischen epidemischen Enzephalitis mit besonderer Berücksichtigung der experimentellen und epidemiologischen Beweise für die Krankheitsübertragung durch Mücken, Tr. Soc. path. jap. **28:** 135-145, 1938. Petrischeva and Shubladse.[15]

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Culex tarsalis, Aedes dorsalis, Aedes nigromaculis, Culiseta incidens and Culiseta inornata[19] have been demonstrated experimentally to be potential vectors. C. pipiens was not found on Okinawa and C. tritaeniorhynchus was practically absent during late July and August in many districts where cases of encephalitis continued to appear. C. quinquefasciatus was present in abundance for several months before the outbreak and continued to be the mosquito most readily found in homes during August. For every hundred C. quinquefasciatus that Captain Parsons caught in homes he found only two or three Armigeres subalbatus. A few larvae of A. togoi were discovered, but adult mosquitoes could not be found. A. albopictus were not found by Captain Parsons in the encephalitis zone he investigated during August, although this mosquito occurred in varying numbers in other parts of the island. Mosquitoes of the species Anopheles hyrcanus sinensis, although not collected because they are only rarely found in houses and their resting place is still unknown on Okinawa, were not readily controlled by the spraying of DDT (4,4'-dichlorodiphenyltrichloroethane) from airplanes in the mountainous northern portions of the island where many rice paddies, located in narrow precipitous valleys, were inaccessible. C. quinquefasciatus was regarded as the most probable vector, and extracts of a number of pools, which consisted of about 100 of these mosquitoes, were inoculated into mice to test for virus. Satisfactory tests on 3 such pools did not yield any virus, but this is not enough to indicate that the species was not a vector. However, if it had been a vector on Okinawa one would have expected to find evidence of infection in chickens,[20] which are known to be bitten by this mosquito in the United States,[21] and yet the chickens, unlike the horses, goats and cow, were without neutralizing antibodies for the virus. One must consider the possibility, therefore, that some other mosquito biting the larger domestic animals and human beings by preference might have been the vector on Okinawa.

What I looked for, and did not find, was direct evidence for the working hypothesis that a mitelike insect, constituting the real reservoir of the virus through winter and summer and from generation to generation, gives rise to virusemia in one or another of the domestic animals, with subsequent dissemination to human beings and other hosts by the mosquitoes which breed in large numbers during the hot spell following the rainy season. This may still be the true epidemiologic cycle despite the fact that neither the "mite" nor the mosquito which might have carried this virus has as yet been found on Okinawa.

Influence of Proximity to Native Population and Domestic Animals on the Occurrence of Encephalitis Among Military Personnel.—Not a single case of encephalitis occurred among the two thirds or more of the total forces which occupied the southern portion of Okinawa, from which practically the entire native population and their domestic animals had been removed for military reasons. It is also noteworthy that all the proved cases of Japanese B encephalitis in military personnel occurred in the extreme northern portion (Hentona, Taira and Motobu peninsula districts). According to Major W. G. Downs, M. C., in charge of preventive medicine for the Island Command, this was also the area in which the control of mosquitoes breeding in rice paddies was much less complete because of the difficult terrain, and in which an outbreak of malaria due to Plasmodium vivax affecting 6,000 to 8,000 natives and several hundred troops occurred at the same time as the epidemic encephalitis.

USE OF MOUSE BRAIN VACCINE

The Japanese B encephalitis mouse brain vaccine developed in 1942 in this country[22] was originally a lyophilized preparation, in which the solution of formaldehyde was neutralized by sodium bisulfite. Because preliminary trials at the laboratories of Sharp & Dohme, Inc., indicated that good lyophilization could not be obtained by the large scale production methods used in 1943, the vaccine that was finally prepared by different biological houses for the Armed Forces was a preparation in liquid form, consisting of a 10 per cent suspension of mouse brain in isotonic solution of sodium chloride, in which the virus had become inactivated by 0.2 per cent solution of formaldehyde in the cold. The minimal requirements for the protective potency of the vaccine were that at least 0.01 cc. of it should constitute a minimal immunogenic dose as determined by an intraperitoneal method of assay in 18 to 20 Gm. mice.[23] The vaccine administered in two doses three days apart produces immunity in mice within one week after the first dose at a time when no antibodies are demonstrable in the blood by the intracerebral neutralization test. Since the vaccine was to be used in the face of an epidemic, two doses of 2 cc. each given three days apart were decided on for general use. Preliminary tests on 35 persons receiving this amount of a vaccine with a minimal immunogenic dose of 0.0054 cc. indicated that in 18 of 25 (72 per cent) persons 35 years of age or younger and in 2 of 10 (20 per cent) 36 years of age or older antibody demonstrable by the intracerebral neutralization test had developed two weeks after the first dose.[23] Since vaccinated mice show good resistance to peripheral inoculation of virus without demonstrable antibody by the intracerebral test, it was believed that the selected dosage might be sufficient to impart the needed resistance during the short epidemic period of encephalitis due to the Japanese B type of virus. It must be granted that this dosage may be inadequate, but it was desirable to avoid administration of large amounts of this vaccine. The commercially prepared vaccines assayed 0.003 cc. to 0.01 cc. for the minimal immunogenic dose and were transported to Okinawa in insulated boxes containing ordinary ice.

Smorodintseff[24] reported that a similarly prepared vaccine has proved effective against the Russian autumn encephalitis (Japanese B) in that among 8,030 unvaccinated persons there were 59 cases of encephalitis with 18 deaths while among 10,485 vaccinated persons there were only 2 mild cases and no deaths. The military situation and other conditions obtaining on Okinawa in July and August 1945 did not permit any controlled study of the protective value of the vaccine. It was considered, along with mosquito control, among the measures that may reasonably be used in the attempt to protect exposed troops against a disease with a reported average case fatality rate of 60 per cent. Approximately 800 to 1,000 military government per-

19. Reeves, W. C., and Hammon, W. M.: Laboratory Transmission of Japanese B Encephalitis Virus by Seven Species (Three Genera) of North American Mosquitoes, J. Exper. Med. **83:** 185-194, 1946.

20. Hammon, W. M.; Reeves, W. C., and Burroughs, R.: Japanese B Encephalitis Virus in the Blood of Experimentally Inoculated Chickens, Proc. Soc. Exper. Biol. & Med. **61:** 304-308, 1946. Reeves and Hammon.[19]

21. Hammon, W. M.; Reeves, W. C., and Galindo, P.: Epidemiologic Studies of Encephalitis in the San Joaquin Valley, California, 1943, with the Isolation of Viruses from Mosquitoes, Am. J. Hyg. **42:** 299-306, 1945.

22. Sabin, A. B.: The St. Louis and Japanese B Types of Epidemic Encephalitis: Development of Noninfective Vaccines: Report of Basic Data, J. A. M. A. **122:** 477-486 (June 19) 1943.

23. Sabin, A. B.: Unpublished data.

24. Smorodintseff, A. A.: J. Mikrobiol. Epidemiol. Immunol. Moskva **11-12:** 61-68, 1942. Personal communication, 1944.

sonnel operating in areas where most of the civilian cases were occurring were vaccinated between July 15 and 20, i. e., about seven to ten days after the first cases had been reported. It is perhaps noteworthy that the single case of encephalitis (onset August 8) which occurred among military government personnel was in a hospital corps man (case 7, table 6) who was not vaccinated. When the number of civilian cases continued to increase and a certain number of probable and suspected cases of encephalitis had been diagnosed in military personnel, it was decided to vaccinate those who were in close proximity to areas where civilian cases were occurring. This decision was reached at a time when the future course of the outbreak could not be predicted and was largely based on the consideration that it was not wise to gamble on the chance that relatively few cases would occur or to rely entirely on mosquito control measures.

Enough vaccine was distributed to provide two doses of 2 cc. each for about 77,000 persons, and 60,000 to 70,000 were probably vaccinated. Through the efforts of Major W. G. Downs, M. C., reports were received on 53,139 persons who received the two doses and 2,274 who had only one dose, and the following information originates in part from his summary. The 61 local reactions which were reported consisted mainly of pain and swelling at the inoculated site with, in some instances, enlargement of the axillary lymph nodes and included 5 cases of infections requiring incision and drainage. The latter all came from two small units and may have represented a break in aseptic technic. There was also a good deal of variation either in what was considered a local reaction or in recording it, for one Army division with 12,380 men inoculated with two doses reported only 1 local reaction, while a Marine division with 18,991 men similarly inoculated reported 35 local reactions. Systemic reactions characterized generally by headache, fever, malaise and occasionally nausea and vomiting occurring within twenty-four to forty-eight hours after inoculation were reported in only 19 persons, but it is probable that there were more. However, it was apparent that systemic reactions were infrequent and certainly much less common than similar reactions following the administration of typhoid vaccine. Nineteen allergic reactions characterized by urticaria sometimes with angioneurotic edema and often with moderate difficulty in breathing, all with good response to epinephrine, were reported. Comdr. B. R. Reinertsen (MC), U.S.N.R., kindly supplied the following note on 1 such case: "Fifteen minutes after injection, the patient noted nausea, tightness of the throat, mild dyspnea and tingling of the fingers. Examination revealed a minimal amount of cyanosis. Twenty minutes after the injection of a solution of 5 minims (0.3 cc.) of epinephrine subcutaneously, there was relief of the dyspnea, sensation of tightness of the throat and tingling. Ten minutes later there developed a generalized urticarial rash with discrete large wheals. Again the patient was treated with a solution of 3 minims (0.2 cc.) of epinephrine subcutaneously. Urticaria subsided in approximately one hour, and there were no symptoms remaining." Since mouse brain represented

TABLE 13.—*Summary and Analysis of Neurologic Reactions Reported for 55,403 Persons After Vaccination with Japanese B Encephalitis Mouse Brain Vaccine on Okinawa (1945)*

Case	Interval Between Onset of Symptoms and Vaccination	Signs and Symptoms	Outcome	Diagnosis	Relation to Vaccination
1. C. C.	On day of 1st dose	Pain in back and thoracic region; next day the left trapezius, serratus and sternocleidomastoid muscles were weak	Later discounted as "reaction" by reporting officer	?	..
2. C.	5 days after 2d dose (8 days after 1st dose)	Drowsy	Drowsy in hospital for 2 or 3 days; recovery without noteworthy events	None	..
3. J. B. G.	5 days after 2d dose 8 days after 1st dose	Headache, dizziness, blurring of vision; complained of stiff neck but no nuchal rigidity. "Moderate weakness of quadriceps muscle." CSF 2 cells	6 days after onset "headache gone; muscular weakness gone"	?	?
4. J. W. J.	4 days after 1st dose 1 day after 2d dose	Numbness of left forearm and wrist drop 2 days later; temp. and CSF normal; history of chronic alcoholism	Function in forearm returning 9 days after onset	Peripheral neuritis involving left radial nerve; "Sat. night paralysis"	..
5. H. R. K.	2 days after 1st dose (2d dose given 4 days after 1st)	Generalized aches, pains and weakness growing progressively worse at night; examination 9 days after onset revealed apparent weakness in all muscle groups; hamstrings tight and painful with hyperesthesia on pressure; knee jerks, ankle jerks and biceps reflex absent; no fever; CSF 2 cells, globulin negative but protein recorded as 178.2 mg. per 100 cc.	No information available	Peripheral neuritis ?; infectious polyneuritis ?	Very questionable because symptoms appeared 2 days after vaccine
6. C. A. T.	10 days after 1st dose 6 days after 2d dose	Numbness and weakness of arms and legs; no pleocytosis, 3 days after onset; 2 weeks after onset, motor weakness of arms and legs but no reflex changes	4 weeks after onset evacuated with note: "Extreme muscular weakness, fatigue, altered superficial and deep reflexes." No other information available	Polyneuritis ?	Possible
7. G. B. L.	15 days after 1st dose (There is some question as to whether 2d dose was given 10 days after 1st)	"Headache, stiff neck and malaise sudden onset of flaccid paralysis of both lower extremities excluding the feet, and marked weakness of the forearms and fingers; possible weakness of right lateral rectus muscle; absent knee jerks and ankle jerks; temperature never over 99.6 F.; CSF 3 cells"	Much improved 10 days after onset; paralysis receded with return of leg reflexes; walking 19 days after onset with only slight weakness of both quadriceps	Infectious polyneuritis ?	Possible
8. E. J. P.	7 days after 1st dose 3 days after 2d dose	Gradual onset of weakness in arms and legs; at peak of weakness could not raise hands to wash face and was able to rise from a chair only by pulling himself up with hands; sensation undisturbed and all reflexes reported normal; reports on muscle atrophy incongruous; CSF, 180 mg. protein per 100 cc.; afebrile	Improvement began 10 days after onset. Examination by Dr. C. D. Aring 6 months after onset revealed nomal gait, no muscle atrophy or weakness and no abnomalities beyond disturbed emotional state	Infectious polyneuritis ?	Possible

a new antigen for American military personnal one must consider the possibility that some, if not all, of these allergic reactions may be instances of sensitization to solution of formaldehyde resulting from previous inoculations with other vaccines preserved in this drug; 1 man in this group himself advanced the history of sensitivity to formaldehyde. Horsfall[25] has demonstrated that formalized protein can induce antibodies and hypersensitiveness not only to the homologous preparation but also to heterologous formalized proteins.

A summary and analysis of the 8 neurologic reactions which were reported are presented in table 13, and the following points are especially worthy of note:

1. There was not a single instance suggestive of demyelinating encephalopathy.

2. In 3 of the 8 cases (1, 2 and 3 in table 13) the manifestations were so slight that no diagnosis could be ventured.

3. In the 5 remaining cases, in which "neuritis" of one form or another was the most probable diagnosis, case 4 occurred in a chronic alcoholic addict and was of the typical "Saturday night paralysis" radial palsy variety, and case 5 had its onset two days after the first dose, rendering its relationship to vaccination highly improbable.

4. Only 3 significant neurologic reactions may possibly be related to vaccination; in the 2 more severe cases improvement began ten days after onset and almost complete recovery is reported.

5. Before the vaccination program was begun on Okinawa the diagnosis of neuritis was made in 3 military patients (cases 1, 2 and 3 in table 7) who were considered as possibly representing "radicular types of Japanese B encephalitis," but this diagnosis was not confirmed by serologic tests.

6. Various types of neuritis have previously been reported following the administration of foreign protein serums, typhoid vaccine and the like, although it is doubtful that the etiologic relationship of these inoculations is unequivocal.

Conclusions cannot be drawn regarding the protective value of the vaccine from the data obtained on Okinawa. For various reasons the general vaccination program did not get under way until the second week in August, and all the indications are that the epidemic was practically over by the last week of August—the last serologically proved military case had its onset August 21. It was pointed out earlier, in the remarks on the data in table 7, that in a considerable number of patients with varying signs suggestive of involvement of the nervous system there was no serologic evidence of infection with the Japanese B type encephalitis virus (the tests were also negative for St. Louis and Western equine types). Data obtained by Dr. Hammon, who remained in Okinawa after I left, showed that cases of this type continued to occur in September in both vaccinated and unvaccinated personnel. There were 2 vaccinated patients in this group who had complement-fixing antibodies as well as neutralizing antibodies (patient 12 in table 6 and patient Bro. tested by Dr. Hammon), who might represent infection with the Japanese B virus, although it is not improbable that their antibodies might have resulted from vaccination; 1 (Bro.) had his first symptoms six days after the first dose and four days after the second dose, while the other's symptoms began sixteen days after the first and thirteen days after the second dose of vaccine.

25. Horsfall, F. L., Jr.: Formaldehyde and Serum Proteins: Their Immunologic Characteristics, J. Immunol. **27**: 553-567, 1934; Formaldehyde Hypersensitiveness: Experimental Study, J. Immunol. **27**: 569-581, 1934

SUMMARY

1. During an outbreak of encephalitis in the native population on Okinawa during July, August and the early part of September 1945, there were 38 cases of suspected virus infection of the nervous system among American military personnel. A definite clinical diagnosis of encephalitis was probably justified in only 12 of these cases, and 2 of these patients died.

2. A virus which was identified as that causing the Japanese B type of encephalitis was isolated from the brain of a native who died on the fifth day of the disease. No virus could be obtained from the brain of the 1 military patient who died on the tenth day, despite the fact that multiple lesions were present in the areas from which material was taken for mouse inoculation. No virus was obtained from the lung tissue, cerebrospinal fluid or blood of patients with specific evidence of infection.

3. Serologic tests on serums obtained at different intervals after the onset of infection revealed that appreciable amounts of neutralizing antibody were present as early as three days after the onset of symptoms and that, as a rule, it was not possible, therefore, to establish a specific diagnosis on the basis of the absence of this antibody in specimens taken in the acute stage and its appearance during convalescence. It was necessary to demonstrate a definite increase in the amount of neutralizing antibody by a quantitative method.

4. It was established that 0.05 cc. of a patient's serum having an intracerebral neutralization index of 20 three days after onset was capable of neutralizing at least 500,000 mouse LD_{50} doses of Japanese B encephalitis virus by the intraperitoneal route.

5. With properly standardized antigens, the complement fixation test was found to be the method of choice for practical purposes. The necessary increase in titer or even its first appearance may be delayed for as long as five weeks after onset.

6. Neutralizing antibody without complement-fixing antibody was found early in the disease (in 1 instance for as long as three weeks after onset) and also in Okinawan natives without a history of encephalitis who had had their infection some time in the past.

7. With the aid of both the neutralization and complement fixation tests, a specific serologic diagnosis of encephalitis due to Japanese B type of virus was established only in 9 American military cases in addition to the 2 fatal cases.

8. In the patients in whom tests gave serological proof of Japanese B virus infection, drowsiness, lethargy, mental confusion and disorientation, semicoma or complete coma in the more severe cases, occurring in association with high temperatures, nuchal and spinal rigidity, leukocytosis and pleocytosis were the chief clinical manifestations of importance for diagnostic purposes.

9. The history of endemicity of the disease on Okinawa advanced by native physicians found support in the demonstration of neutralizing antibodies in 90 per cent of Okinawan natives without a history of encephalitis who were 20 years of age or older (group of 30), in 55 per cent of 11 persons in the 10 to 19 year age group and in none of 16 persons in the 1 to 9 year age group.

10. Neutralizing antibodies were also demonstrated in all 15 Heanza or Okinawa horses tested (not in any of 10 American horses tested for control), in at least

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3 of 10 Okinawa goats, in 1 Heanza cow but in none of 12 Heanza or Okinawa chickens. This may indicate that domestic fowls probably do not play the same role in the epidemiology of encephalitis due to Japanese B virus on Okinawa that they are believed to play in some, but not all, areas of the United States where the St. Louis type encephalitis and the Western type equine encephalitis have occurred. The fact that the larger domestic animals such as the horse, goat and cow are attacked would point to mosquitoes, which bite these animals and human beings by preference, as the probable vectors.

11. Although Culex quinquefasciatus was the predominant mosquito on Okinawa during the course of the outbreak, evidence was not found to indicate that it was the vector. The negative, limited tests for virus as well as the absence of antibodies in chickens may indeed be regarded as evidence against it.

12. No cases of encephalitis occurred among the more than two thirds of the total armed forces quartered in the southern part of the island from which almost the entire native population and their domestic animals had been removed. The serologically proved military cases all occurred in the extreme northern portion of the island (Hentona, Taira and Motobu peninsula districts) where the control of mosquitoes breeding in rice paddies was incomplete because the difficult mountainous terrain made them inaccessible to DDT spray from airplanes and other means of dispersion; it was in these same areas that an outbreak of malaria due to Plasmodium vivax in 6,000 to 8,000 natives and several hundred troops occurred at the same time as the encephalitis.

13. Japanese B encephalitis mouse brain vaccine was administered to 60,000 to 70,000 of the military personnel stationed in the northern portion of the island in proximity to civilian foci of infection. Special conditions obtaining on Okinawa did not permit any conclusions in regard to the protective value of the vaccine or the adequacy of the dosage used. There was not a single instance suggestive of demyelinating encephalopathy among the 53,139 persons receiving the two doses and the 2,274 who received only one dose of the vaccine, on whom reports were obtained. Three cases of one form or another of "neuritis" reported in this group may or may not have been related to the vaccination, since cases of "neuritis" were also seen in persons who did not receive the mouse brain vaccine. The report of 19 instances of allergic reactions in this vaccinated group suggests the possibility that in some, if not all of these, sensitization to solution of formaldehyde might have been a factor.

ADDENDUM

Approximately 250,000 additional persons received two or three doses of mouse brain vaccine during the summer of 1946. Again there was not a single case suggestive of demyelinating encephalopathy. At least 3 cases of a syndrome suggestive of infectious polyneuritis and in no way different from that occurring among unvaccinated personnel in the Far East were seen. One of these patients died, and the only significant pathologic changes were found in the nerve roots and were of the same type seen in fatal cases of the Guillain-Barré infectious polyneuritis syndrome. In this patient, as well as in several others who died of typical poliomyelitis subsequent to vaccination, demyelinating lesions were not found in the central nervous system.

DEVELOPMENT AND USE OF BAL

A Review, with Particular Reference to Arsenical Dermatitis

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Basing his opinion on previous studies, in particular those of A. Heffter and collaborators in 1903 and 1908,[1] P. Ehrlich[2] in 1909 stated his idea that the toxic action of arsenic is due to its attack on sulfhydryl (SH) compounds or "arsenoreceptors." These compounds were recognized as essential to biologic oxidation and reduction processes. Many other investigators have advanced the thesis that metallic compounds and certain other poisons combine with the thiol groups of tissue enzymes or of members of oxidation and reduction systems, such as glutathione and cysteine, and thus inactivate these constituents necessary to life and function. Long before World War II the concept was generally held that "detoxification" of arsenic and of certain other metallic and even nonmetallic compounds may be accomplished by administration of chemicals containing thiol groups. One of the early fundamental studies of this effect was that of C. Voegtlin, H. A. Dyer and C. S. Leonard,[3] who in 1923 demonstrated the detoxifying effects of sulfhydryl compounds (glutathione and cysteine) on arsenic. And at about the same time Hopkins and Dixon[4] and Peters and Walker[5] found that certain arsenicals abolished the fixed —SH (sulfhydryl) in washed muscle tissue and in the "active" layer of the skin.

THE DEVELOPMENT OF BAL (DIMERCAPROL) IN ENGLAND

However, it remained for the English scientists R. A. Peters, L. A. Stocken and R. H. S. Thompson[6] to advance the theory that agents which "tie up" the —SH groups of the tissues will interfere with the activity of the pyruvate oxidase system, which is dependent on the —SH groups for its activity. They then went on to show that dithiol compounds would tend to have greater affinity for certain arsenicals and would form relatively nontoxic and more stable compounds with these arsenicals than would either monothiols or "dithiol" proteins in the tissues. They observed a close relationship between the arsenic content of a lewisite-kerateine compound and the thiol content of the kerateine. One of their most significant findings was that when aqueous solution of kerateine was treated with lewisite, 75 per cent of the arsenic found in the lewisite compound was in combination with two thiol groups.

Read before the Section on Dermatology and Syphilology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 4, 1946.

From the New York Skin and Cancer Unit of the New York Postgraduate Medical School and Hospital of Columbia University College of Physicians and Surgeons.

1. Heffter, A., and Hausmann, M.: Ueber die Wirkung des Schwefels auf Eiweisskoerper, Beitr. z. chem. Physiol. u. Path. **5**: 213, 1903-1904. Heffter, A.: Die reduzierenden Bestandteile der Zellen, Med.-naturw. Arch. **1**: 81, 1907.

2. Ehrlich, P.: Ueber den jetzigen Stand der Chemotherapie, Ber. d. deutsch. chem. Gesellsch. **1**: 17, 1909.

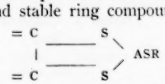
3. Voegtlin, C.; Dyer, H. A., and Leonard, C. S.: On the Mechanism of the Action of Arsenic upon Protoplasm, Pub. Health Rep. **38**: 1882, 1923.

4. Hopkins, F. G., and Dixon, M.: On Glutathione: Thermostable, Oxidation-Reduction System, J. Biol. Chem. **54**: 527, 1922.

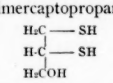
5. Peters, R. A., and Walker, E., cited by Peters, Stocken and Thompson.[6]

6. Peters, R. A.; Stocken, L. A., and Thompson, R. H. S.: British Anti-Lewisite (BAL), Nature, London **156**: 616, 1945.

Their idea was to compete for the arsenic with the dithiol-containing proteins in the tissues by offering simple synthetic dithiol compounds which might form relatively nontoxic and stable ring compounds such as



The researches of Peters, Stocken and Thompson led to the use of 2,3-dimercaptopropanol



as a detoxifying agent against the arsenicals of chemical warfare. This agent could not only prevent the toxic action but reverse it, provided that "the toxicity had not been too long established." As this 2,3-dimercaptopropanol was first developed by the British as a decontaminating and neutralizing agent against lewisite, it was designated "BAL," for the "British anti-lewisite," and this has become the generally accepted name.[7]

THE EXPERIMENTAL USE OF BAL

Great hopes for the clinical effectiveness of BAL (dimercaprol) were based on these theoretic considerations as well as on in vitro tests. These hopes were fully realized when BAL was shown to be effective in both laboratory animals and human beings. The effectiveness of the compound could be demonstrated in damage and poisoning due to arsenical agents of chemical warfare as well as to arsenical therapeutic agents.[8]

The following summary gives some of the important effects of BAL against arsenical damage:

1. In both laboratory animals and human beings the damage to the skin due to arsenical vesicant agents of chemical warfare could be prevented by the preceding application to the skin of BAL preparations.[9]

2. In both laboratory animals and human beings the damage to the skin produced by arsenical vesicant agents of chemical warfare could be arrested and probably even reversed by the local application of BAL preparations two minutes to two hours after exposure to the damaging agent.[10]

3. The systemic poisoning produced in laboratory animals by various arsenical agents, including oxophenarsine hydrochloride, could be effectively counteracted by BAL. This was shown by a significant reduction in mortality rate and a longer survival time of the BAL-treated poisoned animals accompanied with an increased urinary excretion of arsenic.[11] While this beneficial action of BAL in systemic poisoning could be achieved by application of BAL to the skin, the parenteral administration of the drug was much more effective.[11b]

4. In vitro experiments on trypanosomes and spermatozoa demonstrated that organisms which had lost their motility and showed early degenerative changes due to arsenic poisoning regained their motility and their normal appearance after addition of a dithiol.[12]

EFFECT OF BAL IN ARSENICAL DERMATITIS

Dermatitis produced by antisyphilitic arsenical drugs was first treated by inunction with BAL in England.[6] Later on, patients with sensitization dermatitis due to adamsite, an arsenical chemical warfare agent, were treated by inunction in this country.[13] Intramuscular injections of BAL were also used in England.[14] The most extensive series of patients with arsenical dermatitis treated with BAL is that assembled by Eagle.[15] This series included patients treated at the Rapid Treatment centers of the United States Public Health Service. In these cases BAL was given intramuscularly, either as a 5 per cent solution in peanut oil with benzyl benzoate, 10 per cent; or as a 10 per cent solution in peanut oil with benzyl benzoate 20 per cent.

In Eagle's series there were 88 cases of arsenical dermatitis, 51 of which were typical cases of exfoliative dermatitis. BAL "usually stopped the progression of the inflammatory reaction and accentuated the healing process." In his series the average time for definite improvement in the exfoliating conditions which responded to treatment (80 per cent) was three days, and the average time for almost complete recovery was thirteen days.[16]

Among the cases of arsenical dermatitis which did not respond to treatment with BAL (20 per cent), gluteal abscesses or cellulitis developed at the site of injection in 5 cases. No such complication developed in any of the other cases of arsenical dermatitis or of other BAL-treated arsenical complications (see following paragraphs).

In a previously reported series of 40 cases of arsenical dermatitis (these are obviously included also in the aforementioned later series of 88 cases), Eagle [17] noted a mortality rate of 5 per cent and discussed the factors influencing the effectiveness of treatment with BAL in arsenical dermatitis. He stated that initially after administration of BAL there was a subsidence of edema and inflammation of the skin, a decided fall in temperature and a striking subjective improvement. While the weeping of the lesions subsided, the painless exfoliation often progressed and in some cases appeared to be accelerated as the dermatitis healed. The impression was gained that the longer the duration of the dermatitis prior to administration of BAL, the longer the time required for definite improvement. Cases of mild dermatitis with only pruritus and erythema responded most quickly (in from twenty-four to forty-eight hours).

7. Waters, L. L., and Stock, C.: BAL (British Anti-Lewisite), Science **102**: 601, 1945.

8. It was, of course, soon realized that BAL might be effective also against poisoning by other metallic compounds. This has been shown to hold true for mercury poisoning (Gilman, A.; Allen, R., and Phillips, F. S.: 1944, 1945.* Longcope, W. T., and Luetscher, J. A., Jr.: 1945*). The use of BAL has also been studied in poisoning due to lead, stibium, vanadium, bismuth, cadmium and zinc.[5] Except in the case of cadmium the results have not been unequivocal or particularly encouraging, but further investigations are still required.

9. Sulzberger, M. B.; Baer, R. L., and Lowenberg, C.: 1942-1943.*

10. Sulzberger, M. B.; Barr, D. P.; Baer, R. L., and Lowenberg, C.: 1941, 1942, 1943.* Calvery, H. O.: 1943.* Peters and associates.[8]

11. (*a*) Eagle, H.: 1942.* (*b*) Bunting, H.; Ordway, W.; Harrison, H.; Durlacher, S., and Albrink, W. S.: 1942, 1943.* (*c*) Eagle, H.; Magnuson, H. J., and Fleishman, R.: 1943, 1944.* (*d*) Cattell, McK.; Riker, W. F., and Rosenfeld, G.: 1944.* (*e*) Peters and associates.[8]

12. Eagle, H.: 1942, 1943; McLeod, 1942, cited by Waters and Stock.[5]

13. Longcope, W. T.; Wintrobe, M. M.; Luetscher, J. A., Jr., and Jager, B. V.: 1943.*

14. Carleton and others, cited by Peters, Stocken and Thompson.[8]

15. Eagle, H.: The Systemic Treatment of Arsenic Poisoning with BAL (2,3-Dimercaptopropanol), J. Ven. Dis. Inform. **27**: 114, 1946.

16. All available evidence indicates that the improvement which BAL effects in exfoliative dermatitis and other cutaneous eruptions due to arsenical agents is associated with detoxification of the arsenic. Often, but by no means always, there is an increased urinary excretion of arsenic at the time when the dermatitis improves. Nevertheless, the possibility should be seriously considered that some of the improvement in these cases may be due to another effect of BAL, namely, the furnishing of large quantities of —SH groups as "building blocks" for the amino acids of the epidermis and other tissues (Peters, R. A.: Exfoliative Dermatitis Treated with Cystine, Lancet **1**: 264, 1945. Sulzberger, M. B., and Baer, R. L.: Year Book of Dermatology and Syphilology, Chicago, The Year Book Publishers, Inc., 1945, p. 99).

17. Eagle, H., and Magnuson, H. J.: 1945.*

EFFECTS OF BAL IN OTHER COMPLICATIONS OF ARSENICAL THERAPY

In other complications of arsenical therapy treated with BAL Eagle[15] again reported the most extensive and up-to-date series of cases, which may be summarized as follows:

Toxic Encephalitis.—Of 55 patients, of whom 40 were either convulsing or in coma at the time of start of BAL therapy, 44 recovered completely within from one to seven days and 11 died. In some cases resulting in death, delay of therapy or too small a dosage of BAL appeared to be partially to blame for the result.

Agranulocytosis.—There were 11 cases, with recovery in 10 and 1 death.

Aplastic Anemia.—In 3 cases there was no beneficial effect from BAL.

Jaundice.—Of 14 patients, 5 showed prompt response to BAL, 7 evidenced no effect from BAL and there were 2 in whom the effects were debatable.

Massive Overdosing of Oxophenarsine Hydrochloride.—Of 4 cases, there were 3 with prompt response and 1 ending in death (the patient received too small a dose of BAL).

"Arsenical Fever."—There were 44 cases, with prompt recovery in all.

DOSAGE AND SIDE EFFECTS OF BAL

A considerable amount of work has been done in laboratory animals[17] and in human beings[18] on the effective dosage of BAL for treatment of arsenical dermatitis and other complications of arsenical therapy. On the basis of all available data Eagle[15] suggested the following schedule of dosage: In severe complications 3 mg. per kilogram is given in each injection (1.8 cc. of a 10 per cent solution of BAL for a patient weighing 60 Kg.). For the first two days six injections are given at four hour intervals; four injections are given on the third day and two injections thereafter for ten days or until complete recovery. In mild complications 2.5 mg. per kilogram is given in each injection (1.5 cc. of 10 per cent solution of BAL for a patient weighing 60 Kg.). For the first two days four injections are given at four hour intervals; two injections are given on the third day and one or two injections thereafter for ten days or until complete recovery.

Pharmacologic studies in human beings[19] have shown that side effects barely begin at the 2.5 to 3 mg. per kilogram level when four injections of this dose are given at four hour intervals on two successive days. The incidence of side effects increases rapidly when the dose is raised to 4 and 5 mg. per kilogram. All the side effects observed even at these higher dosage levels have been of a temporary nature. They included nausea, vomiting, headache, burning sensation of the lips, mouth, throat and eyes, pain in the teeth, lacrimation and salivation, muscular aches, burning and tingling of the extremities, feeling of constriction of throat and chest and elevation of systolic and diastolic blood pressure. These side effects usually are at their maximum at fifteen to twenty minutes after intramuscular administration of the BAL preparation.[19a]

When applied to the skin BAL is a primary urticariogenic agent (whealing agent), and cutaneous allergic sensitization to BAL does occur.[20] Thus far these effects have not in any case interfered with the use of the drug in the treatment of arsenical complications.

Barbiturates have been recommended as an antidote for the more severe side effects of BAL.

SUMMARY AND CONCLUSIONS

1. The history of the development of BAL is reviewed.

2. The studies of the important antiarsenical effects of BAL in vitro in laboratory animals and in human beings are summarized.

3. The action of BAL in counteracting the toxic effects of antisyphilitic arsenicals is reviewed.

4. The recommended dosage schedule for BAL is presented, and the undesirable side effects of the drug are listed.

5. It is pointed out that BAL was developed on the basis of a fundamental theoretic concept, which led to in vitro studies, indicating that it was able to compete successfully with thiol-containing tissue enzymes in attracting the poisonous metallic ion.

6. BAL has been proved of great practical value in preventing and counteracting many of the toxic effects of different arsenicals and of mercury. Its effects against many other metallic and nonmetallic poisons are not yet proved and require further study.

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ABSTRACT OF DISCUSSION

DR. JUD R. SCHOLTZ, Pasadena, Calif.: As Dr. Sulzberger and Dr. Baer were among those who did fundamental work in the development of BAL, it is appropriate that they should have presented the subject to this section. It is apparent that this is a life-saving drug. Such a product puts a great responsibility on the physician. Prompt and accurate diagnosis and equally prompt and accurate treatment are serious obligations. It is likely that dermatologists will be more familiar with this drug than most of their colleagues in other branches of medicine. Therefore, we have a public relations job in our communities. We ourselves must become thoroughly familiar with this drug and see that it is popularized. We have in the past few months adequately demonstrated that this is a remarkable drug, inasmuch as it works in strange hands as well as in those of the men who developed it. With it we have saved several persons at the Los Angeles County Hospital in the last few months. Will Dr. Sulzberger tell us, please, how to obtain this drug? My associates and I have been unable to get it.

DR. HERMAN ALLINGTON, Oakland, Calif.: The development and use of this drug, as is true of penicillin, antimalarial drugs, the various fractions of blood plasma and insecticides, was greatly accelerated by the recent war. The authors have summarized the data on which this investigation was based and have shown step by step how it was carried through to a successful conclusion. I have been interested in BAL ever since early in the war, when it was made available for the prophylaxis and treatment of injuries from lewisite gas. At that time, its formula and mode of action were a carefully guarded secret. We were glad to have it but somewhat skeptical of its value. It is now apparent that when given early in adequate dosage, it is effective against certain types of heavy metal poisoning. From a canvass of the opinion of a number of men who have used it, I should judge that the incidence of local reactions, some of them severe, is somewhat greater than this paper would

18. Eagle.[15] Eagle and Magnuson.[17]

19. (a) Sulzberger, M. B.; Baer, R. L., and Kanof, A.: 1944.* (b) Gold, H.; Modell, W., and Cattell, M.: 1944.* (c) Eagle and associates.[15c]

20. Sulzberger, M. B.; Baer, R. L., and Kanof, A.: 1943, 1944.*

* The incomplete references refer to reports which were secret, confidential or restricted at the time of presentation. Summarizing articles on BAL will appear shortly in the unclassified medical literature. (Since the preparation of this report several of these summarizing articles have appeared in the Journal of Clinical Investigation for July 1946.)

indicate. Further study, of the same excellent quality which led to the development of BAL, will probably soon lead to the discovery of similar but even more effective and perhaps less irritating medicaments.

DR. JOHN G. DOWNING, Boston: I was called in consultation at 9:45 a. m. on April 27 regarding treatment of 2 young men. Each had been given 0.6 Gm. of oxophenarsine hydrochloride in a single dose, due to a mistake in the use of a hospital ampule containing ten doses for an individual injection. I ordered immediate shock therapy, including intravenous administration of dextrose and proper sedatives. Both men had been admitted to the hospital for treatment of early syphilis. After the injection they complained of a bad taste in the mouth; within a few minutes colicky pains developed in the abdomen, with nausea, retching and vomiting, and they suffered from chills followed by headaches. Evidence of toxic hepatitis with some degree of jaundice was present in each case. There was tenderness of the liver on palpation. At 10:45 a. m. they were given 3.5 cc. intramuscularly of BAL in peanut oil. Other supportive measures were continued, such as 10 per cent dextrose solution intravenously, 300 cc. of Parenamine, 5 mg. of vitamin K and 300 mg. of ascorbic acid. BAL, 1.8 cc. intramuscularly, was given every four hours for four doses the first day and twice daily for the four succeeding days. After four days, the gastrointestinal disturbances, which also included diarrhea, ceased, and at the end of eight days both patients were asymptomatic. I have the record of the several arsenic determinations made on the urine.

DR. STEPHEN ROTHMAN, Chicago: The detoxifying effect of BAL is impressively rapid and complete. In a patient in our department, severe arsenical dermatitis cleared up within three days after BAL was given. The most fascinating aspect of this dithiol compound is that its detoxifying action is considerably more than twice that of monothiol compounds. The reason for this potentiated action is that the spatial distribution of the two sulfhydryl groups in BAL is similar to the spatial distribution of sulfhydryl groups in proteins. Thus BAL is best suited to split off the arsenic from the protein molecules in which one arsenic atom has blocked two sulfhydryl groups. Historically it might be interesting to mention that in the twenties German authors praised the detoxifying effect of injections of cutaneous extracts ("detoxin") in arsenical and heavy metal poisoning. The effect of such extracts was obviously due to their sulfhydryl content.

DR. MARION B. SULZBERGER, New York: I want to thank the gentlemen for their remarks and to say that I agree with essentially everything they have said. Dr. Rothman's explanation is close to that given by the discoverers of this compound. Thompson and Stocken actually showed that when they treated keratеine with arsenic the arsenic was bound to the dithiols, i. e., to the compounds containing two sulfhydryl groups, so that in this respect Rothman's explanation is in entire agreement with their theory and with their experiments. As to Dr. Scholtz's question: As far as I can tell, BAL is not generally available as yet. However, one can still get it I believe. It may be obtained direct from Dr. Harry Eagle, at Johns Hopkins University School of Medicine, Baltimore. He will send it air mail, I am certain, if you telegraph when you have a suitable case. Moreover, I think that the Intensive Treatment centers that participated in the cooperative program of evaluating antisyphilitic schedules are supplied with BAL and that it can be obtained from them.

NOTE.—Since the date of this discussion, a preparation of BAL for intramuscular injection has been made available by Hynson, Westcott & Dunning, Inc., of Baltimore.

Nobel Prize Winners.—A study of the recipients of the Nobel Prize in physiology and medicine and in physics and chemistry in the *U. S. Naval Medical Bulletin* shows that in the forty-five years during which the prizes have been given the youngest recipient of the prize for medicine was Sir Frederick Banting, a Canadian, the co-discoverer of insulin. He was 32. Ferdinand Brisson of France was 86 and Jane Addams of Chicago was 74 when they received the Nobel Peace Prize.

NEPHRECTOMY FOR HYPERTENSION WITH UNILATERAL RENAL DISEASE

Report of Forty-Nine Cases

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and
WAIT BOHNE, M.D.
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Increased arterial blood pressure occurs in patients having a variety of diseases. Some of these diseases can be demonstrated clinically by pyelography, and because of this fact pyelography is included in the routine study of hypertensive patients in the University of Michigan Hospital. Patients with hypertension also have electrocardiographic study, eyeground examination, orthodiagraphic study and study of total renal function. When the excretory urograms are unsatisfactory for diagnosis, cystoscopy with split phenolsulfonphthalein and retrograde pyelogram is done.

During the years 1940 to 1945 inclusive, 2,055 hypertensive patients were studied in the urologic clinic

TABLE 1.—*Hypertension (Pyelograms)*

Year	Pyelograms, Total No.	Not Indicating Abnormality or Inconclusive	Indicating Abnormality	
			No.	%
1940 and 1941	588	448	80	15.1
1942 and 1943	680	626	54	7.9
1944	378	353	25	6.6
1945	469	445	24	5.1
Total	2,055*	1,872	183	8.9

* 21.6 per cent of total pyelograms (9,501).

(table 1). This figure represents approximately 20 per cent of the total number of pyelograms (9,501) that were made during the six year period covered by this study. Over-all, there was an incidence of renal abnormalities of 8.9 per cent. It will be noted that in 1940 and 1941 there was an incidence of 15.1 per cent, as against 5.1 per cent in 1945. This means that the interpretation of the pyelogram in the early part of the study was more critical than that in 1945 or else that the incidence of abnormality in these early years was three times what it was in 1945. It seems more probable that the critical interpretation of the pyelogram rather than the incidence has changed. During this period all the pyelograms were read by the same man. The extent of this variation in interpretation is further emphasized when we find that Schroeder and Steele in 1941 reported an incidence of about 40 per cent, as compared with our incidence of 9 per cent. For any one then to postulate, without consideration of this variable, that the incidence of renal pathologic changes in the hypertensive patient is the same as that in the average adult is not justified.

Our interpretation of the pyelograms is reported in table 2. One hundred and eighty-three lesions are recorded. This table shows that hypertension may coexist with any of the common renal lesions, but there

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Read before the Section on Urology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 4, 1946.

is no consistent relationship between hypertension and any particular gross renal lesion. Congenital absence, reduplication of pelvis and bilateral lesions occurred in 70 of the patients. The remaining 113 patients had unilateral lesions. The matter of interpretation is here again important. In all categories there is a consistent incidence of lesions throughout the years of study, with the one exception of pyelonephritis. The ratio for this condition is 15.5, 15.5, 7.5, 7.5, 6 and 3. One cannot well believe that there were five times as many cases of pyelonephritis in 1940 as in 1945. It must follow then that the interpretation favored the lesion more in earlier years than now.

Of the 2,055 pyelographic studies carried out on hypertensive patients during the period from 1940 to 1945, approximately 1,350 were made solely in an effort to determine a possible renal cause for hypertension, for that number of patients had no symptoms or urinary findings which alone would have indicated the need for urologic studies. The cost of making pyelographic studies is considerable. If some means of selection could be employed so that pyelography could be eliminated from the routine examination and employed in only selected cases, then a great economy could be effected. That method, however, is not now available.

As stated, only 9 per cent of all the patients studied had abnormalities, while less than 5 per cent were candidates for nephrectomy and fewer came to operation. Because of our low incidence of demonstrable surgical renal defects in hypertensive patients and because some authors have expressed pessimism with regard to the result of operation in such cases, an evaluation of nephrectomy in hypertension is needed and justified.

During the eleven year period 1934 to 1945 in the records of the University Hospital 49 cases of severe hypertension treated by nephrectomy were found. In all but 7 of these the systolic pressure was well over 200 or the diastolic over 100. The follow-up record has been longer than twelve months in all but 8 of the cases.

Table 3 summarizes the results of nephrectomy in these 49 cases. Seventeen patients (34.6 per cent) were considered to have had good results, and 6 (12.4 per cent) were improved; results in 26 (53.0 per cent) were failures. A good result means that the patient was free from hypertensive symptoms and had a normal blood pressure at the time of the last follow-up report. In other words, the patient is considered cured according to clinical evidence at the date of check-up examination. Results were regarded as a failure when a patient was not improved by nephrectomy or had subsequently died a hypertensive death.

An analysis of the 49 patients shows that 17 had no symptoms of the urinary tract or abnormalities of the urine as determined by simple clinical examination. The remaining 32 had some complaint or abnormality referable to the urinary tract. It is thus evident that no simple clinical test can be used to select the patients most likely to have pyelographic abnormalities; all must be examined by urographic studies.

There were 19 cases of unilateral chronic pyelonephritis with hypertension (table 4). Eight of the patients had atrophic pyelonephritis, sometimes termed congenital hypoplasia. Inasmuch as all the patients with so-called hypoplasia in this group showed microscopic evidence of the inflammatory changes, it is questionable that these are true examples of congenitally undeveloped kidneys. It seems more probable that the lesion represents an arrest of growth due to inflammatory changes occurring in the small kidney of the infant, for the majority of the patients are known to have had infections of the urinary tract during early childhood. In some instances the infective process appears to have burned itself out during childhood, while in others the inflammatory process has been a prolonged one. This type of lesion might well be termed infantile chronic pyelonephritis, in contrast to the adult type of pyelonephritis, in which atrophic changes occur but never

TABLE 2.—*Hypertension (Renal Abnormalities)*

Pathologic Changes	1940 1941	1942 1943	1944	1945
Congenital absence	1 (?)	0	1	..
Hypoplasia	4	3	2	3
Nonrotation	0	1	..	..
Ptosis or ectopia	1	7	..	..
Reduplication (pelvis)	10	6	7	4
Polycystic disease	1 (?)	6	2	1
Solitary cyst	1 (?)	1	..	..
Malignant growth	2	1	..	..
Ureteral calculus	2	0	1	1
Unilateral renal calculus	12	7	3	3
Bilateral renal calculi	1	2	..	..
Unilateral hydronephrosis	9	3	2	3
Bilateral hydronephrosis	3	0	..	2
Pyonephrosis	0	1	..	..
Unilateral chronic pyelonephritis	15	10	5	3
Bilateral chronic pyelonephritis	16	5	1	..
Tuberculosis	2	1	..	2
Bilateral calcification of renal vessels, with renal aneurysm on right side	..	..	1	..
Total	80	54	25	24

TABLE 3.—*Results of Nephrectomy in Hypertension (1934-1945)*

	Cases	
	No.	%
Good	17	34.6
Improved	6	12.2
Failure	26	53.0
Total	49	

TABLE 4.—*Hypertension—Results of Nephrectomy*

Pathologic Change	No.	Good	Improved	Failure
Chronic pyelonephritis (renal hypoplasia)	8	2	2	4
Chronic pyelonephritis without hypoplasia	11	5	1	5
Hydronephrosis	11	4	2	5
Renal tuberculosis	4	1	..	3
Hypernephroma	1	1	..	..
Pyonephrosis	6	1	..	5
Pyonephrosis with calculus	7	3	1	3
Post-traumatic healed infarct, with chronic pyelonephritis	1	..	..	1
Total	49	17	6	26

the dwarfed kidney that follows infections acquired during childhood. In this group, 2 of the patients remained free from hypertension following nephrectomy and 2 are improved, while 4 showed no change. The 11 patients with chronic pyelonephritis without hypoplasia fared better after nephrectomy: 5 had good results, 1 was improved and there were 5 failures. One of the cases in this group is outstanding and should be reported in its details.

A. B., a man aged 41, was admitted to the University of Michigan Hospital on Oct. 14, 1938, complaining of hypertension with headaches for three years and shortness of breath with dyspnea on exertion for a year. He has had gross hematuria on two occasions, five months and one month prior to his admis-

sion to the hospital. Examination was essentially noncontributory except for the following factors: The blood pressure was 200 systolic and 110 diastolic; the heart was enlarged, and the eyegrounds showed hemorrhagic and exudative retinitis and mild hypertensive retinitis. The urine was normal. Excretory pyelograms showed a normal left kidney but nonvisualization on the right. Retrograde pyelograms revealed a normal left kidney and advanced changes characteristic of advanced chronic pyelonephritis on the right.

Nephrectomy on the right side was performed Nov. 11, 1938. The pathologist reported "dilation of the renal pelvis; inflammatory infiltrations beneath the pelvic mucosa; extreme sclerosis of the arterioles, and arteriosclerotic nephropathy with advanced pyohydronephrotic atrophy." The postoperative course was uneventful, and at the time of discharge from the hospital, on his fifteenth postoperative day, the blood pressure was 135 systolic and 80 diastolic.

He has been seen on numerous occasions during the eight years that have elapsed since nephrectomy, and on each occasion he has reported freedom from all hypertensive symptoms. One year following operation his blood pressure was 130 systolic and 86 diastolic, and at that time the eyegrounds were reported to be free from hemorrhages and exudates. The most recent check-up examination was made in July 1945. At that time the blood pressure was 130 systolic and 80 diastolic, the eyegrounds were normal and the patient reported that he was symptom free and working every day.

Nephrectomy was performed on 11 patients who had hydronephrosis with significant hypertension. Five of them had no permanent lowering of the blood pressure following operation, while 2 have had moderate improvement and 4 have had normal blood pressures that have persisted since operation. Two of the latter are significant in that they were known to have had normal levels of blood pressure prior to the development of advanced hydronephrosis and were followed for a time during which the development of hypertension paralleled the development of advancing hydronephrosis. In each instance nephrectomy was followed immediately by a return of the blood pressure to normal. Both of the patients were students at the University of Michigan and were followed at the University Health Service and the University Hospital during the entire cycle of the illness.

The remarkable improvement that ensued following nephrectomy in 3 of 7 patients who had calculous pyonephrosis and coincidental hypertension was as unexpected as it was gratifying. Also, 1 patient who is considered to have been improved but not cured has enjoyed a most spectacular regression of the hypertensive symptoms which had incapacitated her prior to nephrectomy.

CONCLUSION

Chronic arterial hypertension can be of renal origin. When unilateral renal disease is demonstrated by roentgenologic examination it can be treated by nephrectomy, with an expectation of improvement or cure of the associated hypertension in about half of the cases.

In the present series of cases the greatest incidence of favorable results occurred in the cases of adult chronic pyelonephritis, hydronephrosis and calculous pyonephrosis. In the group of cases termed "infantile chronic pyelonephritis" by us, the incidence of cure is definitely less than that in the adult type.

Routine urologic studies in all hypertensive patients, regardless of the high over-all cost entailed, appear to be desirable for the reason that a significant number of the patients having gross renal lesions could not otherwise be discovered.

ABSTRACT OF DISCUSSION

Dr. Alfred I. Folsom, Dallas, Texas: The interpretation of the so-called atropic or hypoplastic kidney is difficult clinically, since the pathologists themselves are divided as to whether a specimen shows true hypoplasia or true atrophy of the kidney. There are certain definite criteria which have helped me to differentiate between the hypoplastic kidney and the pyelonephritic atrophy. One is the arrangement of the calices. In the hypoplastic kidney, the ureter goes up in the pelvis and then there is a small group of calices and infundibula which run almost parallel, almost like a cluster of roses; this is totally different from the picture of pyelonephritis, in which there is the uniform distribution of the calices, of slope from the upper pole to the lower pole; in the cases of atrophy from inflammation this same arrangement of the calices is maintained, whereas the true hypoplastic kidney has this group of calices more or less bunched together, like a bunch of roses. The only constructive suggestion which I should like to make with reference to the evaluation of the kidney that may be potentially the cause of hypertension is that developed by aortography. When Gus Santos first brought out his epoch-making paper, it shook me like an earthquake. We have recovered from our first terrible shock and fear of this method, so that I have done several of these aortographic investigations myself. We are now, with reference to that subject, much like Gil Thomas and Bill Braasch and I were many years ago in interpreting pyelograms. However, I think that if a sufficient number of us get interested in it and do a large enough number, there may come out of it a much clearer interpretation than now exists. In aortography in this particular type of case we have a means of helping to determine whether this kidney should be removed, with the idea of the blood pressure being affected. This method will help pick out the patients who will be relieved by this operation; as evidenced by this frank report, only about half of them, even in 49 cases out of over 2,000 that we have investigated, were actually helped. The criterion which I think is sound is that a diminution in the caliber of the renal artery and an insufficiency of the circulation of the kidney are demonstrated. That is probably one of the soundest bases and one of the most valuable contributions that this nerve-racking procedure may contribute to this interesting subject.

Dr. William J. McMartin, Omaha: I wish to compliment Dr. Ratliff for the study of the largest number of hypertensive patients examined urologically in one institution to determine whether or not there was present unilateral renal disease acting as the generator of hypertension. Unilateral renal disease as the sole cause of hypertension is rare. In 1942, I reported with McCurdy 4 cases of hypertension, in which we were able to get good results following unilateral nephrectomy. The first patient had a blood pressure of 240 systolic and 130 diastolic. He had had a calculus removed from a kidney a number of years before. His preoperative symptoms were attacks of blindness with severe headache. We removed an atrophic, infected kidney. His blood pressure fell to 140 systolic and 90 diastolic and averaged this pressure for four years. He worked every day for three and one-half years, when a coronary attack developed and he died. The second case was that of a postmaster with a blood pressure varying from 170 systolic and 100 diastolic to 186 systolic and 110 diastolic. His complaints were attacks of abdominal distention and pain in the back. Urologic examination revealed unilateral hydronephrosis and hydroureter, with pyelonephritis. Nephrectomy was performed. The blood pressure following operation remained at 150 systolic and 90 diastolic. This patient lived for three years after the operation and died suddenly of a coronary attack. The other 2 cases were those of men in the third and fourth decades, both with malignant hypertension of over 200 systolic and with diastolic pressures varying from 100 to 140. One had pyelonephritis with early sclerotic thickening in the renal arterioles. The other patient had a more advanced pyelonephritis, with some scarring of the renal parenchyma. Nephrectomy on both of these men brought pressures to normal, and they have stayed normal for five years. Dr. Ratliff and Dr. Nesbit have found that out of 2,055 patients with hypertension 1,350 patients had no urinary findings which might indicate a need for urologic study. Out of the 1,350 cases, I hope that he will tell us how many patients showed unilateral

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renal disease and how many of these came to nephrectomy with successful results. The fact that only 9 per cent of these patients had abnormalities and that less than 5 per cent of these came to nephrectomy should impress all of us that though those patients are amenable to successful treatment it is a rare happening. We are finding repeatedly a note of pessimism in most of the reports, be they of a clinical, operative or experimental nature. Pessimism with regard to surgical treatment of the diseased kidney in these patients is not fully warranted, because cure or improvement may be expected in 50 per cent of these patients able to come to operation.

DR. RIGDON K. RATLIFF, Ann Arbor, Mich.: We have had no experience with the aortogram in the differential diagnosis of pyelonephritis. As to the final disposition of the 2,055 hypertensive patients studied by pyelography, it was pointed out that less than 5 per cent were candidates for nephrectomy and fewer than this percentage came to operation. Those who did come to operation are included in the series of 49 cases, details of which are presented in the paper. It is obvious in this survey that the higher percentage of cures falls in that group of patients who have gross urologic symptoms. Fewer good results followed nephrectomy in the group of hypertensive patients who had no urinary symptoms.

USE OF 5-NITRO-2-FURALDEHYDE SEMICARBAZONE IN DERMATOLOGY

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In a search for an effective agent against both gram-positive and gram-negative pathogenic bacteria invading the skin, the possible value of a nitrofuran was brought to our attention, namely, that of Furacin Soluble Dressing.

NITROFURANS

Chemistry.—The furans are chemicals obtained for the most part from oat hulls. Furfural, the fundamental member of the furan series for the synthesis of other derivatives, results from the dehydration of sugars of five carbon atoms, known as pentoses, present in the natural product. The furans are five-membered heterocyclic ring compounds of this type of formula and numbering systems:

The stability of furan derivatives varies depending on the substitutes present in these numbered positions. Many simple furans are sensitive to acid but stable to alkali. The introduction of a group in the 5 position produces a compound with more stability in respect to acid mediums but diminished stability in respect to alkaline environment. Much work has been done and interest displayed in furan chemistry, but in spite of this there is much fundamental work to be done to further the chemical knowledge of these compounds. Therapeutic applications of furan compounds have been extremely limited.

Bacteriostatic Action.—The in vitro bacteriostatic and bactericidal action of furan derivatives was shown by Dodd and Stillman to depend on the presence of a nitro group in the 5 position.[1] Antibacterial activity was exhibited by the 5-nitro derivatives of a series of simple furan derivatives. This activity extended to a variety of gram-positive and gram-negative bacteria.

The proved antibacterial properties of the nitrofurans, demonstrated in vitro, suggested their possible use in the treatment of wounds. Among others, 5-nitro-2-furaldehyde semicarbazone (Furacin) was found to be nonirritant and nontoxic on local application and to exhibit no adverse effect on the healing of experimental wounds. Because of its antibacterial properties, it was suggested for clinical trial. Subsequently, Meleney, Johnson, Pulaski and Colonna called attention to the desirability of further study of this particular nitrofuran because of its action against gram-negative bacteria.[2]

Furacin (5-nitro-2-furaldehyde semicarbazone) is a lemon yellow crystalline compound having a slight solubility in water (1:4,200) and more solubility in compounds of the glycol type—propylene glycol (1:300) and Carbowax 1500 (1:100). It is heat stable at an autoclave temperature of 120 C. but decomposes at temperatures above 227 C. Exposure to light causes some discoloration. It is effective as an antibacterial agent in the presence of blood and serum. In a study of the mechanism of action of nitrofurans against bacteria, Dodd and Cramer found that 5-nitro-2-furaldehyde semicarbazone, depending on concentration, could prolong the lag phase of bacterial action or, at higher concentrations, exert bactericidal action.[3]

Furacin Soluble Dressing is a 1:500 solution of 5-nitro-2-furaldehyde semicarbazone (Furacin) in a water-soluble vehicle containing Carbowax 1500 and propylene glycol. This preparation was employed in the treatment of infected war wounds in a preliminary study by Snyder, Kiehn and Christopherson.[4] Clinical improvement was correlated with reduction in the bacterial flora. Early deodorization and a clean appearance were observed. Further clinical studies are in progress and will appear in the literature.

Toxicity.—The toxic effects of 5-nitro-2-furaldehyde semicarbazone have been studied in mice, rats, monkeys and human beings. The oral lethal dose of 50 per cent of mice treated (LD_{50}) was found to be 0.58 Gm. per kilogram. For rats, the oral lethal dose of 50 per cent is 0.59 Gm. per kilogram when given orally and 3 Gm. per kilogram when given subcutaneously. Monkeys fed 0.3 Gm. daily for five weeks showed no effects on body weight, electroencephalogram, blood cell counts, renal and hepatic histology or electrocardiogram. Finally, 10 human subjects have ingested this compound, some in doses of 4 Gm. daily for three days and others in doses of 1 Gm. daily for forty-nine days. Nausea was the only reaction observed and occurred in about 20 per cent of patients; of these patients, 8 per cent continued to react by vomiting. One decided sensitization reaction was observed on oral administration of the drug to a patient who had previously received local treatment with 5-nitro-2-furaldehyde semicarbazone dressing for a prolonged period.

Irritant and Sensitizing Properties.—The irritant and sensitizing properties of the dressing and the soluble

Aided by a grant from the Eaton Laboratories, Inc.
Dr. F. Parker Jr. gave suggestions and Dr. Sydney J. Allman, Miss A. K. Daly and Miss Theresa Kelley rendered technical assistance.
From the Department of Dermatology and Bacteriology, Boston City Hospital, and the Department of Dermatology, Tufts College Medical School.
Read before the Section on Dermatology and Syphilology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946.

1. Dodd, M. C., and Stillman, W. B.: The In Vitro Bacteriostatic Action of Some Simple Furan Derivatives, J. Pharmacol. & Exper. Therap. **82**: 11-18 (Sept.) 1944.
2. Meleney, F. L.; Johnson, B. A.; Pulaski, E. J., and Colonna, F.: The Treatment of Mixed Infections with Penicillin, J. A. M. A. **130**: 121-124 (Jan. 19) 1946.
3. Dodd, M. C., and Cramer, D. L.: Personal communication to the authors.
4. Snyder, M. L.; Kiehn, C. L., and Christopherson, M. W.: Effectiveness of a Nitrofuran in the Treatment of Infected Wounds, Mil. Surgeon **97**: 380-384 (Nov.) 1945.

base were studied by patch testing. Two hundred normal persons were patch tested for irritant properties, and ten days later 50 of them were retested for sensitizing properties. The test substances were applied to the skin for forty-eight hours, and the reactions were noted at twenty-four, forty-eight, seventy-two and one hundred and twenty hour intervals. The substances were applied under a 1 inch (2.5 cm.) square piece of cotton fabric, which was covered with oil silk and secured by adhesive tape.

In no instance was there a reaction characterized by erythema with edema, vesiculation or ulceration. The first application of the dressing resulted in erythema reactions (1 plus) in 1.5 per cent of the subjects in twenty-four hours, in 5.5 per cent in forty-eight hours,

TABLE 1.—*Comparative Results in Diseases Treated*

Condition	Brilliant	Good	Questionable	No Effect	No Follow-up	Total
Group I. Diseases due to infection with lower organisms						
Cellulitis	..	1	..	..	..	1
Infectious eczematoid dermatitis	6	14	1	5	14	40
Ecthyma	..	9	1	2	4	16
Impetigo contagiosa	..	20	3	3	14	40
Sycosis vulgaris	..	2	1	..	1	4
Furuncle	..	3	..	..	1	4
Folliculitis	..	..	..	2	1	3
Erythema induratum	..	..	2	..	..	2
Granuloma inguinale	..	..	..	2	..	2
Group II. Diseases due to higher plant or animal parasites						
Dermatophytosis	..	..	..	4	1	5
Infection from insect bite	..	3	..	..	..	3
Group III. Disease due to intoxication						
Occupational dermatitis	..	..	..	9	..	9
Group IV. Diseases due to trauma or physical agents						
Ulcer:						
Traumatic	4	9	..	1	..	14
Decubitus	..	2	1	..	..	3
Postoperative	4	2	..	..	..	6
Infection from first degree burn	..	1	..	..	..	1
Group V. Disease due to circulatory disturbance						
Ulcer hypostatieum	4	14	2	5	4	29
Group VI. Disease due to metabolism						
Acne vulgaris	..	..	3	2	1	6
Diabetic ulcer	..	2	1	..	..	3
Group VII. Diseases due to uncertain causes with structural reaction alone manifest						
Neurodermatitis	..	..	..	4	2	6
Psoriasis	..	..	..	7	1	8
Nummular ezema	..	..	..	2	..	2
Pemphigus	..	..	..	1	..	1
Ulcer (undetermined)	..	..	..	2	1	3
Epidermolysis bullosa	..	..	..	1	..	1
Totals	18	82	15	52	45	212

in 1.5 per cent in seventy-two hours and in no subjects in one hundred and twenty hours. Reactions to the soluble base test occurred in 0.5 per cent at twenty-four hours, in 3.0 per cent at forty-eight hours and in none at seventy-two and one hundred and twenty hours. The second twenty-four hour application resulted in 4.0 per cent reactions in forty-eight hours to the dressing and in 2.0 per cent to the soluble base in the same period.

Photosensitization was not observed. Three subjects were given erythema doses of ultraviolet radiation over the soluble dressing without reactions. The discoloration occurring when the compound was exposed to sunlight apparently did not affect its value. There was no staining of the skin.

DISEASES TREATED AND RESULTS

Two hundred and twelve patients were placed under treatment. The diseases treated have been grouped in conformity with the 1942 "Standard Nomenclature" of the American Medical Association (table 1). In evaluation of the clinical response to the dressing, Meleney's classification has been adopted, the results being divided into four groups: brilliant, good, questionable and no effect.[5] According to Meleney, the usefulness of a therapeutic agent without controls cannot be proved unless the majority of results are either brilliant or good.

Group 1.—Infectious Eczematoid Dermatitis: This group included the infectious eczematoid dermatitis of the legs described by Engman,[6] that of the hands described by Lane and associates,[7] streptococcic dermatitis of the ear described by Mitchell,[8] secondarily infected eczematoid dermatitides surrounding ulcers and dermatophytosis. Of 26 cases remaining under observation, the results were brilliant in 6, good in 14 and questionable or nil in the rest. The longest period of treatment of healed patients was eighteen days and the shortest four days, with an average of 8.6 days. Treatment consisted in application of the dressing twice daily. In the cases of favorable results, the weeping and crusting diminished strikingly in twenty-four to forty-eight hours, with abatement of burning and itching. Temporary irritation was noted in 2 of the 5 patients not responding to treatment.

Ecthyma: Of the 12 cases of ecthyma remaining under observation, the therapeutic response was good in 9 cases and questionable or nil in 3. Four applications were made daily. In 3 cases 5 per cent ammoniated mercury ointment was used for comparison; the response to the two agents was equally good.

Impetigo Contagiosa: Forty patients with this disease were treated, with 26 remaining under observation. Applications were made four times daily, without covering except when necessary to protect the clothing. The result was classified as good if the lesions were healed on the patient's return to the clinic after one week of treatment. This response was obtained in 20 cases; the results were questionable in 3 cases and nil in 3. It was found that a light covering, such as a handkerchief, secured over the face eliminated the dark brown discoloration of the dressing caused by exposure to light and kept the solution in the proper place.

CASE 1.—J. C., a 53 year old man, was first seen on Dec. 14, 1945. Fifteen days previously he had noted a small sore on the left side of his face. This was diagnosed by an attending physician as impetigo. Treatment at that time produced an irritation. Subsequent application of penicillin ointment resulted in a severe eczematoid reaction, with pronounced weeping and crusting over the left side of the face and neck. Burning and itching were severe. Treatment with 5-nitro-2-furaldehyde semicarbazone dressing applied twice daily was initiated. The following morning the patient reported that he had his first night's sleep in two weeks; the weeping had ceased, and the crusting had diminished. On the fifth day the patient's condition was decidedly improved, and in eight days the face was healed.

This case illustrates the value of an additional therapeutic agent (fig. 1).

Sycosis Vulgaris: Only 3 patients with sycosis vulgaris were treated. The result was good but temporary in 2 and questionable in 1.

The number of cases in the rest of group 1 is too small to permit of the drawing of conclusions.

5. Meleney, F. L.: The Difficulty of Evaluating Drug Treatment in Surgical Infections, J. A. M. A. **124**: 1021-1024 (April 8) 1944.

6. Engman, M. F.: An Infectious Form of an Eczematoid Dermatitis, Am. Med. **4**: 769-773 (Nov. 15) 1902.

7. Lane, C. G.; Rockwood, E. M.; Sawyer, C. S., and Blank, I. H.: Dermatoses of the Hands, J. A. M. A. **128**: 987-993 (Aug. 4) 1945.

8. Mitchell, J. H.: Streptococcic Dermatoses of the Ears, J. A. M. A. **108**: 361-365 (Jan. 30) 1937.

Group 2.—Dermatophytosis: Five patients with dermatophytosis with secondary infection were treated. In 2 the secondary infection was relieved, but the fungous infection persisted in all cases.

Group 3.—Dermatitis Venenata: There were 9 cases of dermatitis venenata with secondary infection. All the patients showed rapid improvement of the secondary infection, but later the underlying dermatitis became irritated.

Group 4.—Ulcers: Twenty-four patients with ulcer—traumatic, postoperative or decubitus—were treated. The majority of responses were brilliant or good. One of the postoperative ulcers developed after a Linton flap operation for vascular disturbance in a lower extremity. The ulcer, which extended along the entire incision, was 5.0 cm. in width, with an uneven base and irregular edges, and was discharging profusely. The bacterial flora included Staphylococcus aureus, Streptococcus haemolyticus and Pseudomonas aeruginosa. The distinct odor disappeared in forty-eight hours, and the discharge was controlled in seventy-two hours. The second postoperative ulcer, which was 6 cm. in diameter, showed a nearly pure culture of Ps. aeruginosa. It had been unresponsive to gentian violet medicinal, dilute acetic acid and chlorine preparations. The response to 5-nitro-2-furaldehyde semicarbazone dressing was prompt, and the cultures were sterile on the fifth day.

Three patients were treated for decubitus ulcer. Their underlying medical problems were subacute bacterial endocarditis, diabetes mellitus and malignant growth of the gastrointestinal tract. The patient with subacute bacterial endocarditis had an ulcer over the sacrum 8 cm. wide, with a deep crater, uneven base and irregular edges. The dressing was applied twice daily. Even though the patient's general condition was poor, the ulcer promptly became clean and was epithelized in twenty-two days. The patient died on the twenty-fourth hospital day. Autopsy showed no evidence of toxic effects of the dressing. The ulcers of the diabetic patient were extensive, involving large areas over the sacral and lumbar areas, and extended to the flanks. There was also a large abscess in the right popliteal space. The ulcers were dressed twice daily, and 60 Gm. of the dressing was injected into the abscess once daily for seventeen days. The patient died of diabetes on the seventieth hospital day. The dressing controlled the odor and caused a diminution in the discharge. There was no evidence of irritation of the tissues. Autopsy revealed no findings suggestive of toxicity of the dressing. There was no follow-up on the third case.

Group 5.—Group 5 was wholly composed of cases of hypostatic ulcer, of which there were 29, with 25 patients remaining under observation. The response was brilliant in 4 cases and good in 14. Three patients were hospitalized with rest in bed; the rest were ambulatory. No supportive measures such as elastic bandaging or stockings were used. Two patients were operated on for improvement of circulatory disturbances after ulcer infection had been controlled. The longest period of treatment was one hundred and twenty-nine days and the shortest forty days. In all cases the odor and discharge disappeared within from two to seven days. Occasionally a patient complained of a mild burning on application of the dressing, but this lasted for only a few minutes and was not intense enough to warrant discontinuance of the treatment. In 3 cases in which the dressing controlled the infection preparatory to skin grafting, it was also used after grafting. The percentage of takes was comparable to that with other accepted methods. There was no evidence of interference with epithelization or granulation.

The following cases illustrate the correlation of bacteriologic and clinical findings:

CASE 2.—A. K., a 47 year old woman, was treated in the hospital during February 1945, with elevation, compresses and diverse topical applications, without favorable response. On readmission on Oct. 15, 1945, the ulcers had enlarged, despite treatment in the dispensary, and involved one fourth of the anterior and lateral aspects of the lower part of the left leg. There was a profuse discharge. Cultures grew Staph. aureus, Str. haemolyticus and Ps. aeruginosa. A Hinton test of the blood elicited a negative reaction. Use of the dressing resulted in rapid control of the discharge, and the ulcers showed a clean granulating surface. On December 10 a Linton flap operation for improvement of circulation was performed, and the dressing was employed postoperatively. On Feb. 26, 1946, the patient was discharged with the ulcers healed except for an area measuring 0.8 cm. in width, which was reported healed two weeks later. The length of treatment was one hundred and twenty-nine days. There was no interference with granulation or epithelization. Although extensive denuded areas were dressed over a long period, there was no evidence of toxic effects from absorption (fig. 2).

Fig. 1 (case 1).—*A*, severe pustular and eczematoid dermatitis in J. C. following treatment of impetigo with penicillin ointment. *B*, appearance five days later, after use of Furacin Soluble Dressing.

CASE 3.—J. N., a 65 year old man, was referred by the Surgical Clinic with a treatment-resistant hypostatic ulcer and eczema of the right leg of four months' duration. The ulcer measured 1.5 cm. in its greatest width, the edges were sharply

demarcated and there was a slight discharge. A Hinton test of the blood elicited a negative reaction. Daily applications of the dressing were made, and the leg was healed forty-two days later. The bacterial flora included Staph. aureus, Staphylococcus albus, Str. haemolyticus, diphtheroids and enterococci. Cultures showed the strains to be sterile in four, eight, four, eight and one days respectively.

Group 6.—Acne Vulgaris: Of the 5 cases of acne vulgaris remaining under observation, the response was questionable in 3 cases and nil in 2. No irritation was observed.

Diabetic Ulcer: Three patients with diabetic ulcer were treated. The results were good in 2 cases and questionable in 1. There was no irritation.

Group 7.—The patients in this group were treated in some instances for control of secondary infection and in others, such as pemphigus, to ascertain the effectiveness of the dressing. The underlying conditions were

Fig. 2 (case 2).—*A*, ulceration of A. K. treated with Furacin Soluble Dressing from Oct. 5, 1945 to Dec. 10, 1945. A Linton flap operation was performed, and dressing was used postoperatively. *B*, result on discharge from hospital, Feb. 26, 1946.

not favorably affected. In 3 cases of psoriasis a definite local irritation resulted, which receded promptly on discontinuance of the treatment. The same phenomenon occurred in 2 cases of nummular eczema.

BACTERIOLOGY

Cultural studies of the bacterial flora were made in 29 cases. As shown in table 2, eighty-seven strains of sixteen species of organisms were isolated. The gram-positive organisms Staph. aureus, Staph. albus, Str. haemolyticus, Corynebacterium diphtheriae and diphtheroids represent 81.6 per cent of the total cultures. Of the gram-negative organisms, Proteus vulgaris and Ps. aeruginosa were the most frequent. Only two strains of Escherichia coli were noted.

All specimens were cultured aerobically and anaerobically. All were plated in a uniform manner, and rough estimates of the number of colonies were made. The symbol 4 + indicates a heavy confluent growth, 3 + a heavy but not confluent growth, 2 + moderate growth and 1 + scant growth. Cultures were not considered

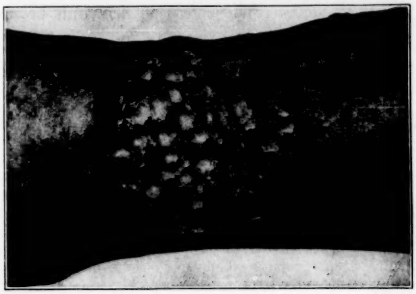

Fig. 3 (case 3).—Successful pinpoint graft in which Furacin Soluble Dressing was used for the treatment of ulcer and subsequent dressing of graft.

reduced unless there was an appreciable reduction in the number of colonies, that is, from 4 + to 2 + or less or from 3 + to 1 +.

Subcultures were made at the time of planting in order to eliminate the possibility of bacteriostatic action of any of the drug carried from the dressing.

Virulence tests were done on all C. diphtheriae. One was found to be virulent. The coagulase test was done on all staphylococcus cultures (table 2).[9]

The number of gram-negative organisms recovered from the cases included in this study was surprisingly small. In only 7 of the cases did we feel that the gram-negative organisms present were significant. In the 2 cases in which Esch. coli was present, 1 a case of decubitus ulcer, there was a heavy growth of P. vulgaris plus Klebsiella pneumoniae type B and Escherichia communior, all of which disappeared in three days. The other strain of Esch. coli was cultured from a traumatic ulcer which originally showed Str. haemolyticus and

Fig. 4 (case 4).—Patch test reaction to soluble base on patient (E. M.) who had used Furacin Soluble Dressing for treatment of persistent ulcer from Oct. 17, 1945 to Feb. 7, 1946, at which time he suffered an intense sensitization dermatitis of the legs. There was a positive reaction to the compound also.

Staph. aureus. The Staph. aureus disappeared in two days, but Str. haemolyticus remained throughout. As the Esch. coli recovered in this case appeared in only

9. Tabulated according to E. R. Shipley, M. C. Dodd (unpublished report).

one culture and was not present in the cultures taken before or after, we are inclined to believe that it was a contaminant.

In 6 cases, P. vulgaris was present in substantial numbers and disappeared during treatment. Ps. aeruginosa was recovered in 2 cases.

Str. haemolyticus and Staph. aureus were the predominating organisms of the gram-positive flora recovered. Of these, Staph. aureus responded more readily than Str. haemolyticus, as evidenced by table 2.

The purpose of these studies was to provide some measurement of the efficacy of the dressing in clinical use. It is not intended to imply that the reduction of flora is the sole criterion of therapeutic effectiveness. It is recognized that methods of collecting and culturing flora, the nature of the lesion and the presence of the therapeutic agent are factors that must be considered in clinical evaluation. Inasmuch as the bacterial flora are a factor, their reduction, within limits, appears to indicate the efficacy of the dressing. As shown in the second column of the table, 57 (81.4 per cent) of the 70 strains with complete data were reduced.

Column 3 shows that forty-seven (67.1 per cent) of the seventy strains disappeared. This occurred in twenty-four hours in some instances and not until seventeen days in others, as shown by column 6. Clinical improvement cannot always be correlated with the disappearance of a strain, because of the multiplicity of strains and because conditions heal even though some strains remain throughout the treatment.

Column 4 shows that 13 (18.5 per cent) of the strains were not reduced and did not disappear under treatment. This group may be considered resistant. No attempt was made to study the treatment-resistant strains in vitro. In the interpretation of this column, the length of treatment and the possible presence of unusual species must be taken into account.

Column 5 shows the number of strains on which incomplete data resulted for diverse reasons.

SENSITIZING EFFECT

Early in January 1946, a new lot was received from the manufacturer. We were not informed of a change in the preparation, so that separate records were not kept of patients treated by different lots of the dressing. From the middle of January to date, 7 cases of severe sensitization, 6 generalized and 1 severe local, have occurred. Of the 212 patients covered in this report, 147 were treated with the first lot, of whom there was only 1 with proved sensitization and an occasional temporary irritation. Seven of the other 65 patients who were treated during approximately the same period that the second lot was in use became sensitized. It should also be noted that at about the same time the second lot was used a change was made in the selection of cases. Previously many ulcers had been treated, necessitating relatively long periods of treatment. Thereafter, more superficially infected dermatoses were selected and fewer ulcers, thus permitting much shorter periods of treatment. The choice of patients, namely, sensitized persons, may in part account for the increase in untoward reactions.

The manufacturer has not been able to detect any striking difference between lots but suspected that some change in the base might have occurred. If this is true, all the reactions to the original patch tests with the base should, of course, be discounted and the patch test should be repeated with the new base.

CASE 4.—E. M., a 44 year old man, was treated in the hospital with the dressing for nine weeks beginning Oct. 17, 1945, in an attempt to heal his ulcer. After discharge the ulcer was dressed by a public health nurse with 5-nitro-2-furaldehyde semicarbazone dressing, furnished her in 1 pound (0.5 Kg.) lots. On Feb. 7, 1946, the patient was readmitted because of an intense eczematoid local reaction and a pronounced generalized eczematoid dermatitis, as the result of using the aforementioned second lot of this dressing. Reactions to patch tests with this lot were strongly positive, as was a reaction to a patch test with the soluble base. Because of the intensity of the reaction further testing was refused by the patient. A history was not obtained on the use of other drugs during the time the patient was at home.

In a similar case the treated ulcer was clear and granulating, but on the twenty-ninth day treatment was discontinued because of a local irritation and a generalized dermatitis. A reaction to a patch test with the dressing was positive.

CASE 5.—F. K., a 35 year old man, was placed under treatment for an oval shallow ulcer measuring 1.0 by 1.5 cm. on the lateral aspect of the lower part of the leg on March 27, 1946. The ulcer was clean and granulating when seen on April 3, 10 and 17. On April 26 there was intense oozing and redness locally and a severe generalized eczematoid dermatitis. Patch tests have been postponed because of the intensity of the reactions and the patient's reluctance to undergo further exposure (fig. 5).

TABLE 2.—*Bacteriologic Studies*

Organism	Total Number of Strains	Total Reduced		Total Disappearing		Total Not Reduced		Total with No Data	Average Number of Days Strain Disappeared
		Number	Per Cent	Number	Per Cent	Number	Per Cent		
Staph. aureus	22	15	93.7	10	62.5	1	06.2	6	08.8
Staph. albus	10	7	87.4	7	87.4	1	12.5	2	07.5
Str. haemolyticus	13	9	75.0	5	41.6	3	25.0	1	08.5
Str. viridans	3	2	66.7	2	66.7	1	33.3	0	03.5
Enterococci	5	4	100.0	4	100.0	0	00.0	1	06.0
Diphtheroids	9	6	75.0	5	62.5	2	25.0	1	17.0
C. diphtheriae (virulent)	4	1	25.0	1	25.0	3	75.0	0	08.0
C. diphtheriae (avirulent)	1	0	0.0	0	00.0	1	100.0	0	....
C. perfringens	4	3	100.0	3	100.0	0	00.0	1	04.0
P. vulgaris-spreader	5	4	100.0	4	100.0	0	00.0	1	07.6
P. vulgaris-morgani	4	3	75.0	3	75.0	1	25.0	0	08.3
Esch. coli	2	2	100.0	2	100.0	0	00.0	0	....
Klebsiella pneumoniae	1	1	100.0	1	100.0	0	00.0	0	....
Pneumococcus type XXXIV	1	0	00.0	0	00.0	0	00.0	1	....
Hemophilus influenzae	1	..	....	..	....	..	....	1	....
Ps. aeruginosa	2	..	....	..	....	..	....	2	....
Totals	87	57	81.4	47	67.1	13	18.5	17	

COMMENT

Furacin (5-nitro-2-furaldehyde semicarbazone) appears to be a useful addition to the armamentarium of therapeutic agents, and further studies with it should be done. Its efficacy in the control of gram-negative as well as gram-positive organisms makes it particularly useful in the treatment of ulcers.

Three deaths occurred in patients who had been treated with this dressing. Autopsy of the first 2 patients failed to reveal any findings suggestive of toxicity from absorption, even when the drug was used in large amounts over extended periods. The underlying cause of death in these cases was diabetes millitus in the first and subacute bacterial endocarditis in the second. The cause of death in the third case (in which autopsy was not done) was cerebrovascular accident.

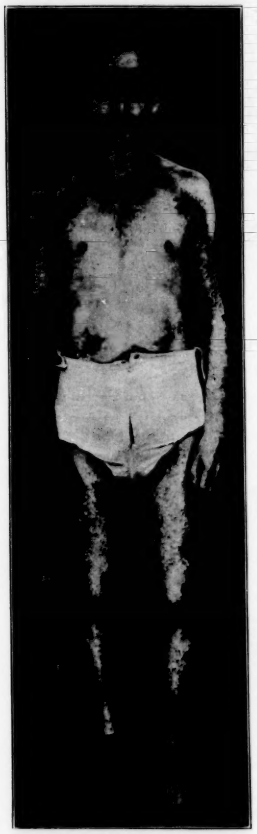

Fig. 5 (case 5).— Local and generalized sensitization occurring in F. K. on the twenty-ninth day after the use of Furacin Soluble Dressing on ulcer and eczematoid dermatitis of the ankle.

It has been our opinion that a great discrepancy exists in this study, owing to the fact that control studies could not be made on absorption from the tissues because of the unavailability of methods for such determinations. Methods for this purpose should be developed in order to gain definite knowledge of possible toxicity from the continued use of this compound in large quantities.

Experience with different lots of 5-nitro-2-furaldehyde semicarbazone dressing indicates an imperative need for stabilization of the preparation per se and suggests the need of further studies with the soluble base in order to provide a stable vehicle. The property that the soluble base possesses of liquefying at low temperatures assures its reaching all parts of the affected area and makes possible the injection of it into abscesses and sinuses. On the other hand, the fact that the dressing liquefies at body temperature makes its control difficult. Further studies should be made for the purpose of developing a base with a higher melting point, a desirable property in the treatment of the type of patients that are covered in this report.

As regards the study of the irritant and sensitizing properties of this compound, a point made by Underwood and Gaul deserves consideration.[10] They have drawn attention to an important point in the discrepancies that sometimes occur between the reactions resulting from patch testing normal persons with a cutaneous drug and those resulting from its clinical use.

As regards testing cutaneous drugs on normal skin, we agree with Underwood and associates that the present methods of testing are of little value, a fact that we discovered in the latter part of our clinical studies. These writers expressed the opinion that a cutaneous drug may be safe for a normal skin but not for a damaged one. In stressing the need for defining methods of testing cutaneous drugs, they wrote as follows:

> Letters arrive weekly from manufacturers stating that their product was tested by an eminent authority and found safe. This is true for the normal skin, whose protective barriers (the p_H, the lipoid coating, the horny mantle) withstood the twenty or forty-eight hour contact; but what about a week or two week contact and, crucially important, the effects of the product on a skin shorn of its protective mantles or eczematized? The product in contact with living epidermal cells, nerve corpuscles and the cutis can be violently toxic, yet harmless when outside the cutaneous protective barriers. The history of this or that remedy helping for a few days, followed by a sudden flare-up, has been consistently noted.

The introduction of a new drug is a hazardous undertaking for the clinician. First of all, he has no control over the advertising and detailing of the product. Second, he has no assurance that the compound that he tests will be the same six months later, an assumption which is being investigated in the case of the product under discussion. There were practically no reactions until January 1946, when reactions began to appear, not only in our own patients but, as we were informed, in patients treated by the drug purchased in the open market. Last, despite the fact that the clinician recognizes the limitations of the drug and stresses its indications and contraindications, these warnings are likely to be disregarded by the medical profession and the laity, and what relieves one cutaneous disturbance will be used in the treatment of an eruption because it resembles the previous one. The establishment of the Therapeutic Trials Committee for the purpose of adequate and critical investigation of therapeutic properties and the safety of new agents will relieve the clinician of this responsibility.[11]

SUMMARY

1. Two hundred normal volunteers were patch tested with 5-nitro-2-furaldehyde semicarbazone and its soluble base, with results that would indicate little or no sensitization of normal skin.

2. Two hundred and twelve patients have been treated with this compound in a soluble base.

3. The drug does not interfere with granulation or epithelization of ulcers.

4. There is no clinical evidence of toxicity from absorption of the drug when it is used in large amounts over long periods.

5. Studies of cultures showed a high percentage of control of gram-positive and gram-negative strains by the drug.

10. Underwood, G. B.; Gaul, L. E.; Collins, E., and Mosby, M.: Overtreatment Dermatitis of the Feet, J. A. M. A. **130**: 249-256 (Feb. 2) 1946.

11. The Therapeutic Trials Committee, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **131**: 596-597 (June 15) 1946.

6. The drug has value in the treatment of superficial infectious eczematoid dermatitides but must be used carefully, owing to the danger of producing sensitization.

7. Although the drug is capable of sensitizing abnormal skins, in our experience to date this tendency is less than that of sulfathiazole or penicillin when used for topical application. However, in inexperienced hands the percentage of reactions may be greatly increased if the drug is used in subjects affected by mycotic infection or by industrial chemicals.

8. The drug shows excellent possibilities in the treatment of superficial infection of the skin, such as impetigo and ecthyma.

9. According to Meleney's classification, this drug has been found to be of value in the treatment of cutaneous diseases due to infection with lower organisms and ulcers resistant because of secondary infection. No therapeutic value has been demonstrated in fungous infections, industrial dermatoses, acne vulgaris and other miscellaneous dermatoses, such as psoriasis and pemphigus.

ABSTRACT OF DISCUSSION

DR. J. GARDNER HOPKINS, New York: Evaluation of an agent for local antiseptic action demands that it be effective and also harmless. Often the opinion of a careful observer on these points is, I believe, of more value than statistics. I give great weight to Dr. Downing's opinion as to this compound, which he has studied carefully, but I can only discuss his evidence, which as to harmlessness is admittedly confused. If these severe and generalized reactions occurred only in patients who were previously eczematized, then the drug may be useful in other groups of patients. If these reactions were due to a defective lot of material, they may be prevented by improved manufacture. If they are unavoidable, then occurrence in 3 per cent of cases would make the general use of this antiseptic inadvisable. As to effectiveness, if it is effective, it presumably acts as an antibacterial agent, and that should be most evident in primary infections. The recovery of 80 per cent of patients with impetigo in one week is good but hardly better than one would expect in a number of other agents. The authors lay particular stress on the good results obtained in infectious eczematoid dermatitis and various ulcers, but in these conditions the underlying cause, the concomitant treatment with dressings, rest or other measures play so large a role that it is difficult to tell how much applied antiseptic had to do with the results. If benefits in these ulcers were due to antiseptic action, one would have expected them to be more evident in primary infections. There is another possibility that the effect of this drug on gram-negative organisms is important, but it must be remembered that the pathogenicity of the gram-negative strains is not known. At least in treating secondary infections in dermatophytosis we found that if one controlled the staphylococci and streptococci with penicillin the gram-negative organisms, even Ps. aeruginosa, would disappear. It is evident that this nitrofuran is good, but how good? I should like to say something that is rather obvious, and I hope that it will be regarded as a criticism of myself and not of Dr. Downing. My associates and I recently tried to evaluate the topical value of penicillin in a hurry. Some opinion had to be given promptly, and we omitted controls. When we were all through we knew that penicillin was good, but we had no way of estimating how good. The clinical evaluation of any therapeutic measure is most difficult and time consuming. The addition of controls makes it more difficult and more time consuming, but without controls it is just hopeless. Occasionally one can treat one lesion with one procedure and another with another in the same patient. Occasionally we can tell something by using different measures in sequence, but as a rule one needs two parallel series of unselected cases, one treated by the drug under investigation and the other by some standard procedure. Otherwise, when the work is finished, there is no answer to the problem.

DR. FRANCIS W. LYNCH, St. Paul: The work of the authors and the experimental studies of others show that this drug has superior features. It is effective in high dilution, in the presence of organic materials and against many organisms, gram-negative as well as gram-positive. It does not interfere with healing tissues. It is incorporated in a highly satisfactory base. Unfortunately, there are deficiencies in our knowledge. No unbiased study of minimal bactericidal concentrations has yet been published, and it will be interesting to see the comparison with the other agents recommended by Meleney's group. Also, the role of Furacin as a sensitizer is still to be determined. Experience with the sulfonamide drugs and penicillin makes one suspicious that prolonged and repeated clinical use may lead to unfortunate experiences. Shipley reported that cutaneous irritation was observed in "only 2" of the first 100 patients, but this figure does not allow a conclusion that the drug may not cause considerable trouble. While my experience with the drug has been less extensive and critical than that of the authors, I am in general agreement with their conclusions. I used Furacin Soluble Dressing in 80 cases. The results in 8 cases of impetigo and 2 of ecthyma were as good as those with sulfathiazole or penicillin. In folliculitis I was more fortunate than Downing, but in sycosis I was disappointed. Incorporation in a more penetrating base may help in these diseases. In secondarily infected dermatitis the preparation was beneficial, but uncomplicated mycotic dermatitis, neurodermatitis and psoriasis were not helped. My experience in infectious eczematoid dermatitis was similar to that with other agents, but Furacin seems less likely to cause irritation or hypersensitivity than do sulfonamide drugs or penicillin. Perhaps past experience has taught the limitations and disadvantages of prolonged application of antiseptics in that peculiar disorder. The successful treatment of various types of ulcers and wounds is encouraging. I have found Furacin useful in dressing the slightly infected wounds after electrosurgery of warts and nevi. There and in all disorders I use it with less hesitation than sulfonamide compounds or penicillin, because the patient has so much less to lose if hypersensitivity occurs. I think that Furacin should prove to be a useful addition to the short list of antiseptics satisfactory in dermatology. Dermatologists must take more interest in scientific study of antiseptics, as neither bacteriologists nor surgeons are familiar with our problems. Downing reiterates Underwood's comments that topical agents must be tested, not only in the laboratory and on normal skin but also in the presence of dermatitis and particularly in allergic dermatoses. Dermatologists should search for agents which are not likely to be given internally and thus avoid the unfortunate results of systemic hypersensitization which developed in many patients as a result of unwise application of sulfonamide compounds and penicillin. While Furacin has some effect on systemic infection, it seems not likely to be used orally or by injection, and this seems to be its major advantage in topical therapy.

DR. W. R. HILL, Boston: In a patient who had been receiving treatment for acne, a traumatic ulcer of the leg developed. An application of 5-nitro-2-furaldehyde semicarbazone was used on this lesion, and within a period of twleve hours a generalized psoriasiform eruption developed. Four days later the skin over the right scapula, which had been sensitized to adhesive tape several months prior to the present dermatitis, showed psoriasiform lesions outlining the site of the adhesive dermatitis. All local therapy was omitted, and within a week the entire psoriasiform eruption had disappeared. Specimens of skin removed for biopsy from several sites, including the area sensitized to adhesive tape, were consistent with the histologic picture observed in psoriasis resulting from arsenical sensitization.

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947

Although reactions to patch tests performed one week after the application of 5-nitro-2-furaldehyde semicarbazone were negative, we thought that the drug was the most likely cause of the dermatitis.

DR. JOHN GODWIN DOWNING, Boston: I wish to thank the discussers. I was pleased to know that Drs. Hopkins and Lynch would lead the discussion. I knew that their conservative evaluation of this drug would be extremely helpful. Throughout this study the manufacturer was cooperative and anxious to try to eliminate the factor causing the sensitivity by stabilizing the vehicle, which I believe is a factor. We retested some of the original formula and a new formula on 25 patients and then retested them after a period of ten days. These studies show that we have a drug with definite sensitizing properties for normal skins. In this report I have tried to make a conservative evaluation of this drug. An attempt has been made to indicate the entities in which it has been found to be of value, and to stress the untoward reactions caused by its use. By the latter we hope to avoid the pitfalls which have occurred in the use of known sensitizers, such as mercury, sulfonamide drugs and penicillin. All dermatologists are cognizant of these and warn patients accordingly when prescribing them. The sulfonamide compounds have been so notorious in producing sensitization reactions that most dermatologists avoid using them in the form of ointments. At the meeting of the American Dermatological Association in Virginia, sensitization from the topical application of penicillin was discussed and cited as being as frequent as 20 per cent. Two recent papers by Gottschalk and colleagues have shown that in 10.4 per cent of the patients treated with penicillin ointment a contact dermatitis developed. Later they showed that by means of patch tests they were able to produce epidermal sensitization to penicillin ointment in 4.5 per cent of 200 persons. They concluded that there is no contraindication to well controlled experimental use of penicillin locally, provided the patient is followed carefully and observed for untoward reactions. Perhaps we should hesitate to introduce a new antibiotic. However, if we read the literature, we will all suffer temerity in treatment, for the local action of even boric acid has been condemned. Practically all usable drugs have their contraindications. However, proper use of them and careful observation of the patient should prevent these reactions, with the exception of the rare case as an unforeseen idiosyncrasy such as the patient described by Dr. Hill. I do not recommend that Furacin Soluble Dressing be used on all ulcers and infections in which old and tried drugs have produced satisfactory results, but I do believe that it will produce results in the aforementioned entities resistant to ordinary therapy.

Toxoplasma.—Since its original description over thirty years ago, spontaneous infections with Toxoplasma have been reported in a large number of species of mammals, reptiles and birds from many parts of the world. In 1923 Jankû reported the first instance of human infection. The disease occurred in an infant as an encephalomyelitis with chorioretinitis. Jankû described the micro-organism but was unable to identify it. Subsequent morphologic studies have established the identity of Jankû's case and it is now accepted as the first reported case of human toxoplasmic infection. The second case of human infection with Toxoplasma was reported by Torres in 1927. The disease occurred in an infant and at that time the parasite was classified as an encephalitozoon, although Toxoplasma was considered. . . . Since the report of Wolf, Cowen and Paige 15 other cases of human infection with Toxoplasma having pathologic study have appeared in the literature, making a total of 18 cases to date. Thirteen have occurred in infants, 1 in a child 6 years of age and 4 in adults. In 4 instances Toxoplasma was recovered and identified biologically by inoculation of the diseased tissues into laboratory animals. The other 14 cases have had morphologic studies in which the organisms have been identified in tissue sections.—Callahan, William P., Jr.; Russell, William O., and Smith, Margaret: Human Toxoplasmosis, *Medicine*, December 1946.

RINGWORM OF THE SCALP

Report of the Present Epidemic

RICHARD J. STEVES, M.D.
Des Moines, Iowa
and
FRANCIS W. LYNCH, M.D.
St. Paul

In recent years ringworm of the scalp has assumed a position of considerable importance in the United States. It was formerly unnecessary for most physicians to be familiar with the problem because of the rarity of the epidemic form in this country, but recently epidemics have spread the disease widely throughout the nation. Some forms of ringworm of the scalp spread rapidly, are capable of causing epidemics and are resistant to topical therapy. Because of the increasing number of cases of this type the problem has become one of public health, and protection of the community is as important as treatment of the individual.

In 1822 Wilkinson [1] recorded an epidemic in England. Cases have since been reported throughout the world, but the greatest incidence of the disease has been in France and in England. In 1843 David Gruby [2] described the causative organism of epidemic ringworm and named it Microsporum audouini. His work went unnoted or disbelieved until 1910, when Sabouraud [3] "rediscovered" the Microsporum of Gruby and succeeded in growing it on artificial mediums. The discoveries of Sabouraud demonstrated that ringworm of the scalp can result from infection with either the Microsporum or the Trichophyton group of fungi.

TYPES OF INFECTION

Both the Trichophyton and the Microsporum group have species which are (*a*) pathogenic principally for certain lower animals (zoophilic) and (*b*) species which are pathogenic principally for human beings (anthropophilic).[4]

Infections contracted from animals have two important characteristics; they are but slightly, if at all, contagious among human beings, and they either are self limited or respond to topical therapy. Humans are poor hosts for this group of fungi, and, as Lewis and Hopper [5] showed, the self-limited features of these fungi may be accounted for by the development of antibodies and the production of an inflammatory reaction in the neighborhood of the infected hairs.

Kerion is a descriptive term denoting a fungous infection of a hairy region in which the inflammatory element is pronounced. There results a granuloma containing multiple openings from which pus exudes. The disease spontaneously disappears in two or three months. Kerion is usually caused by Trichophyton gypseum contracted from cattle and thus occurs most frequently in rural areas. In rare instances other fungi may produce an inflammatory reaction severe enough to be classed as kerion. Several cases were observed in our

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From the Division of Dermatology, University of Minnesota, Dr. H. E. Michelson, Director.

1. Wilkinson, J. H.: Remarks on Cutaneous Diseases, London, John and Arthur Arch, 1822, p. 38.
2. Zakon, S. J., and Benedek, T.: David Gruby and the Centenary of Medical Mycology, Bull. Inst. Hist. Med. **10:** 155 (July) 1944.
3. Sabouraud, R.: Les teignes, Paris, Masson & Cie, 1910.
4. Wise, F., and Sulzberger, M. B.: Modern Treatment of Common Fungus Infections, in The Year Book of Dermatology and Syphilology, Chicago, The Year Book Publishers, Inc., 1938, p. 12.
5. Lewis, G. M., and Hopper, M. E.: Ringworm of the Scalp, Arch. Dermat. & Syph. **36:** 1194 (Dec.) 1937.

present series in which kerion resulted from M. audouini.

In the United States, Microsporum lanosum is the important "animal" (zoophilic) representative of the Microsporum group and is generally transmitted by cats or dogs. Unlike the disease contracted from cattle, M. lanosum usually produces but slight inflammatory reaction. Several members of a family may be infected from the same pet, but extensive epidemics do not occur. Infections produced by M. lanosum must be differentiated from the epidemic form (M. audouini) because they are self limited and nonepidemic.

Infections with "human" (anthropophilic) fungi are grouped, because they are contagious and are usually resistant to topical therapy. The lack of antibodies and severe inflammatory reaction is ideal for survival of the fungus and allows infection to persist for years.

The genus Trichophyton has several species in the anthropophilic group, called endothrix because the spores invade the shaft of the hair. Infections with endothrix Trichophyton are rare and nonepidemic in the United States. Three cases which were observed by us accounted for 0.5 per cent of the total.

More attention will be given later to M. audouini, which has been responsible for the recent rapid increase in ringworm of the scalp in the United States.

DIAGNOSIS

Clinical inspection may suggest a diagnosis of ringworm of the scalp, and in some instances the causative species may be suspected. A gray patch containing broken hairs, a fine scale and a noninflammatory base suggests the epidemic form (M. audouini). In kerion, where the inflammatory reaction reaches its highest degree, the causative organism is usually T. gypseum, and cattle are the usual source of infection. However, infections caused by various fungi often resemble each other, and additional diagnostic procedures are necessary.

Microscopic examination of a hair covered with a 20 per cent solution of sodium hydroxide establishes the mycotic nature of the disease if spores are found, but this method usually fails to determine the genus of the species. If the spores are arranged in a sheath around the hair, the fungus is termed ectothrix (M. lanosum, M. audouini and T. gypseum); if the spores invade the shaft, the fungus is termed endothrix (Trichophyton of human origin).

The Wood light (black light) was first used in the diagnosis of ringworm of the scalp by Margarot and Devèze [6] in 1926. This light produces a brilliant green fluorescence of hairs infected by either M. audouini or M. lanosum but only a dull white or gray fluorescence of hairs infected by some of the endothrix Trichophyton fungi. The difference is striking and easily detected. Thus with the Wood light one can recognize infections caused by the genus Microsporum but cannot differentiate between those caused by M. lanosum (animal) and by M. audouini (human). It is of great value in the survey of school children because it permits early detection of cases. One or more negative examinations are usually required before a treated child is allowed to return to school.

A culture of the organism on artificial mediums (i. e., Sabouraud's dextrose peptone agar) is essential to the establishment of an etiologic diagnosis. Fluorescent hairs are placed on an agar slant and after seven days at room temperature the characteristics of the growth will enable an experienced observer to determine the genus and species.[7]

THE PRESENT EPIDEMIC

By "epidemic ringworm of the scalp" is meant that form caused by M. audouini. Prior to 1940 the greater part of the United States was free from this resistant and highly contagious disease. Reports of its greatest incidence came from England and France, and after the first world war several epidemics were reported in Germany.[8] In New York and Chicago sporadic cases and localized outbreaks occurred, but Lewis and others [9] stated that prior to 1943 there was no report in the American literature of a pandemic such as is now affecting children in widely separated parts of the country. According to Mitchell, Story and Macdonald,[10] an unusual incidence was observed in a school district in New York in November 1942. Epidemics also appeared in Philadelphia, Niagara Falls, N. Y., Chicago and Detroit [11] with thousands of cases in some cities.

In an attempt to determine the extent of the present epidemic questionnaires were sent in January 1946 to the health officer in at least two cities in each state and in each city with a population of over 40,000. Replies were received from 175 of 220 inquiries. Epidemic ringworm of the scalp had appeared in 61 cities (shown in fig. 1), and replies indicated that it probably was present in 27 additional cities. The limitations of such a survey are obvious, but it demonstrates the nationwide character of the present epidemic.

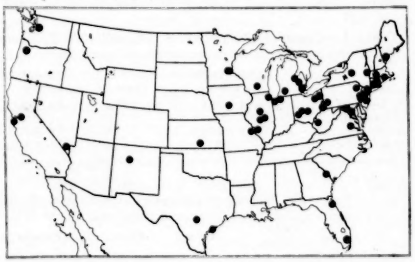

Fig. 1.—This map shows the location of cities in the United States in which the epidemic form of ringworm of the scalp has appeared. (The survey was made in January 1946.)

An unusual opportunity presented itself to study an epidemic in the twin cities of Minneapolis and St. Paul, where every form of ringworm of the scalp was rare prior to 1943. In 1945 and 1946 about 747 cases were observed in Minneapolis, St. Paul and surrounding communities. M. audouini was the organism responsible for all the cases in St. Paul and surrounding com-

6. Margarot, J., and Devèze, P.: Aspect de quelques dermatoses en lumière ultraparaviolette—Note préliminaire, Bull. Soc. d. sc. méd. et biol. de Montpellier **6**: 375 (June) 1925.

7. Conant, N. F., and others: Manual of Clinical Mycology, Philadelphia, W. B. Saunders Company, 1944, p. 244.

8. Buschke, A., and Klemm, G.: Klinische Beobachtungen über die jetzt in Berlin herrschende Mikrosporieepidemie, Dermat. Wchnschr. **72**: 453 (June) 1921. Kleinschmidt, L.: Zur Röntgenbehandlung der Mikrosporie, ibid. **73**: 855 (Aug.) 1921.

9. Lewis, G. M., and others: Measures to Prevent and Control an Epidemic of Ringworm of the Scalp, New York State J. Med. **44**: 1327 (June 15) 1944.

10. Mitchell, H. H.; Story, L. S., and Macdonald, J. C.: An Epidemic of Ringworm of the Scalp, Pub. Health Nursing **35**: 564 (Oct.) 1943.

11. Livingood, C. S., and Pillsbury, D. M.: Ringworm of the Scalp, J. Invest. Dermat. **4**: 43 (Feb.) 1941. Reif, F. B.: Prevention of Ringworm of the Scalp in Children, Arch. Dermat. & Syph. **48**: 533 (Nov.) 1943. Benedek, T., and Felsher, I. M.: Epidemiology of Tinea Capitis, ibid. **49**: 120 (Feb.) 1944.

munities, but not in Minneapolis, where nearly 20 per cent of the cases were caused by other types of fungi (see the accompanying table).

Practically all patients presented one or more areas of broken hair and gray scaling with little other evidence of inflammation. Both clinically and in their fluorescence, definite similarity existed between cases caused by M. audouini and those due to M. lanosum. The occiput was the usual site of initial involvement, although it often began in the temporal region and occasionally elsewhere. Infection of the eyelashes was noted in 1 case from which M. audouini was isolated.

Of 635 children infected by M. audouini, the average age was 7.2 years, the ages varying from 1 to 16 years.

Infection was found nine times as often in boys as in girls.

The epidemic apparently began in St. Paul with the infection of a Negro family, and 3 per cent of the total cases were observed among Negroes. This is approximately 50 per cent greater than the proportion of Negro persons in the total population.

In St. Paul several examples of ringworm of the scalp were recognized in 1941, a few more in 1942 and 1943, and the number slowly increased through 1944. The rapidity with which the disease spread

TABLE 1.—*Causative Organisms in 1945 and 1946 Epidemic*

	Minneapolis Cases	St. Paul Cases	Total Cases
M. audouini	51 (81%)	584 (100%)	635 (98%)
T. violaceum	2 (3%)		2 (0.3%)
M. lanosum	9 (14%)		9 (1.5%)
T. crateriforme	1 (2%)		1 (0.2%)

TABLE 2.—*Analysis of Treatment of 486 Cases*

	Cases	Cures	Failures
Manual treatment	298	75 (25%)	225 (75%)
X-ray epilation	188	150 (80%)	38 (20%)

during the year 1945, when, for a time in St. Paul, the epidemic threatened to become out of control, is indicated by figures 2 and 3 and by the following figures:

Total Cases to Date	Minneapolis	St. Paul
Jan. 1, 1945	2	51
Jan. 1, 1946	51	584

During the epidemic in St. Paul and Minneapolis cases were observed in surrounding communities. Sporadic cases occurred in two suburbs and mild epidemics in three. Several small cities 35 to 150 miles distant had a total of about 100 cases. It appears that the epidemic in Minneapolis and St. Paul acted as a focus for dissemination to surrounding smaller communities.

TREATMENT

Spontaneous cures in children with ringworm of the scalp were noted by Sabouraud;[12] Lewis and his associates[13] emphasized that the disease is self limited or responds to topical therapy when caused by organisms pathologic for lower animals. In the present series all cases caused by M. lanosum were cured within two months. The epidemic form (M. audouini) is notoriously resistant to therapy, though it disappears spontaneously at puberty. Livingood and Pillsbury[11] reported cures by means of topical applications in one third of the cases studied.

The results of treatment were carefully reviewed in 486 cases in St. Paul (table 2). In each case the scalp of the child was clipped and fluorescent hairs were manually removed once or twice a week. The parents were instructed in the daily application of simple topical

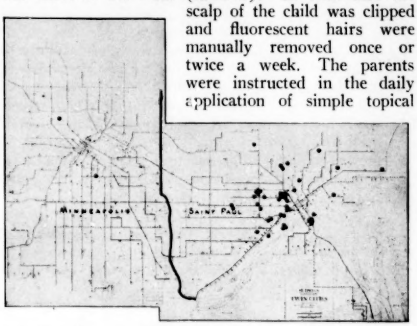

Fig. 2.—Each dot locates the residence of 1 child with ringworm of the scalp in Minneapolis and St. Paul, reported prior to Jan. 1, 1945.

remedies (mild tincture of iodine, or ointments containing sulfur, ammoniated mercury or undecylenic acid and its zinc salt). Within three months 25 per cent of 298 patients were cured. In 188 cases the children were treated with epilation by means of roentgen rays in addition to the above regimen, and 80 per cent were cured within three months. (To some extent the group which did not receive roentgenologic epilation was selected because of a minimal infection, but the group also included patients who refused epilation or for whom this procedure was temporarily unavailable.) Patients were regarded as cured after two examinations under the Wood light failed to show fluorescent hair. The sex or age of patients had little influence on the response to treatment.

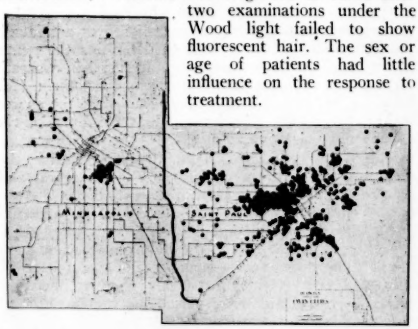

Fig. 3.—Each dot locates the residence of 1 child with ringworm of the scalp in Minneapolis and St. Paul, reported prior to Jan. 1, 1946. Comparison with the map in figure 2 demonstrates the rapid spread of the epidemic during 1945.

EPIDEMIOLOGY

It is unique in medical science to have the spread of a highly contagious disease depend on the transfer of infected hair from one child to another. Contact occurring within the school has been considered important, but we believe that the school itself is not a major

12. Sabouraud,[3] p. 214.
13. Lewis, G. M., and Miller, H. C.: Ringworm of the Scalp, Arch. Dermat. & Syph. **29**: 890 (June) 1934. Lewis, G. M.: Ringworm of the Scalp: Curability Without Depilating Measures, Am. J. M. Sc. **189**: 364 (March) 1935. Lewis, G. M., and Hopper, M. E.: Ringworm of the Scalp, Arch. Dermat. & Syph. **35**: 460 (March) 1937.

factor in an epidemic. The incidence of new cases was as great during the summer months as during the school year, although many were unrecognized until the children returned to school. Of the seventeen schools involved in Minneapolis, epidemics occurred in two. In St. Paul ringworm appeared in fifty-three schools, but in thirty of these there were fewer than 5 cases each.

The frequent occurrence of the disease in siblings demonstrated its contagiousness by means of intimate contact. Among the preschool group 43 per cent had siblings with the disease; in one family 6 of 9 children were infected.

Numerous observers have suggested the barbershop as a source of new infections. Evidence here is entirely circumstantial and is based on the observation that the disease occurs most frequently in boys (9:1 in our series) and that the usual site of onset is the occipital region. It is contended that the clippers and the neck brush would carry infected hairs to the occipital region and would also explain the increased incidence in boys. No case came under our observation in which the infection could with certainty be traced to a barbershop. Although 80 per cent of the boys patronized public barbershops, none of the girls did so.

The deposit of infected hairs on the backs of theater seats has been suggested as a means of spreading ringworm of the scalp. Reif [11] believed that this was important in the spread of an epidemic in Niagara Falls, N. Y. Farley [14] found that after four hundred and twenty-four days hairs infected with fungi produced a growth on cultural mediums. Evidence is available that theater seats may be grossly contaminated with infected hairs. Theaters were attended by 97 per cent of 114 children with ringworm of the scalp who were questioned by us, and 78 per cent of this group admitted attending theaters after they knew they had ringworm. In our opinion contamination of theaters was probably an important factor in the development of the epidemic in Minnesota.

The greatest incidence of the disease occurs in the East and Middle West (fig. 1). This may be due to New York City, Washington, D. C., Chicago and Detroit acting as large foci from which other communities are infected. As shown by this study, other cities in which the epidemics are less extensive may act as secondary foci, producing dissemination to still smaller communities.

COMMENT

The experience of the past few years in Minnesota has demonstrated that it is important for all physicians to be familiar with the epidemic form of ringworm of the scalp. In many localities it is occurring for the first time and must be differentiated from the forms of ringworm which previously existed in those areas.

It was interesting to observe and compare the epidemics in the adjoining cities of Minneapolis and St. Paul. In St. Paul the epidemic was severe and early in 1945 threatened to become out of control, whereas in Minneapolis the number of cases was relatively few. We believe that the reason for these differences is principally in the amount of effort which was expended in combating the epidemics during their early stages. St. Paul was one year ahead of Minneapolis in experiencing serious numbers of cases. Thus facilities were in readiness in Minneapolis, and there was no delay in giving patients roentgen ray therapy once the diagnosis was made.

14. Farley, D. L.: Viability of Ringworm Fungi in Dry Cutaneous Material, Arch. Dermat. & Syph. 3:759 (June) 1921.

The methods of control which should be employed to prevent an epidemic have been excellently presented by Lewis and others.[9] If the active cases in any given locality exceeds a certain number, the diagnostic and therapeutic facilities will be unable to cope with the situation, and the epidemic can be brought under control only with great difficulty. This has occurred in several cities in the United States, and the disease rages unchecked, with the number of cases ranging in the thousands. In St. Paul the epidemic was controlled only with great difficulty and at a considerable cost. In other cities in Minnesota early recognition of the disease and adequate facilities for treatment brought the epidemics quickly under control.

Because of the national scope of the present epidemic we think it important for physicians to raise their threshold of suspicion in diseases of the scalp. Any gray, scaling patch containing broken hairs should be suspected of being ringworm, and physicians should request aid in obtaining an exact diagnosis. In the threat or in the presence of an epidemic the individual physician cannot handle the problem alone. The public health aspects of the disease far outweigh the treatment of the individual patient, and it is the duty of the school, city, county and state health departments to take adequate and early precautions to prevent spread. In Minnesota special ringworm centers were established for the diagnosis and treatment of the epidemic, and in St. Paul a special school was instituted for the children who were prohibited from attending regular schools.

Use of the Wood light is indispensable in the presence of an epidemic. It is used in surveying schools to detect early or unrecognized cases, and it is the only satisfactory method of determining when a case has been cured.

Patients infected with fungi pathogenic for lower animals may be cured with topical applications, and many patients infected with the epidemic form of the disease may be cured by topical application and frequently repeated manual removal of fluorescent hairs. In our experience, roentgenologic epilation was far superior both in rapidity and in percentage of cases cured and should thus be used routinely in the presence of an epidemic until better therapeutic methods are developed. New therapeutic agents are being studied and may prove highly effective.

SUMMARY

1. Information from questionnaires indicates that an epidemic form of ringworm of the scalp has appeared in most sections of the United States.

2. In many communities, including Minnesota, this disease is appearing for the first time.

3. A recent epidemic occurring in Minnesota has involved 747 children.

4. In a selected series of cases, 25 per cent of the children were cured by means of "manual therapy." Roentgen ray epilation of the hair of the scalp was followed by cure in 80 per cent of the cases, and this was the method of choice.

5. The spread from Minneapolis and St. Paul to smaller communities throughout the state is reported, and the possibility of an epidemic becoming out of control is stressed.

ADDENDUM.—The total number of cases of ringworm of the scalp in the epidemic in St. Paul reached 834 on Dec. 31, 1946, of which number only 3 were caused by Microsporum lanosum. On that date only 73 patients remained under treatment.

Special Article

HISTORY OF THE AMERICAN MEDICAL ASSOCIATION

MORRIS FISHBEIN, M.D.
Editor, Journal of the American Medical Association and Hygeia, the Health Magazine
Chicago

(Continued from page 243)

(NOTE.—*Following is the thirteenth chapter of a history of the American Medical Association, in process of development for publication in connection with the celebration of the Centennial of the American Medical Association in Atlantic City in June 1947.*

The general account of the history of the Association will be followed by individual histories of the various councils, bureaus, publications and other activities of the Association. The general account is written by the editor of THE JOURNAL. *Each of the other historical contributions will be by a member of the individual council, bureau or agency responsible and now associated with it or directly related to its work. Included will be photographs, signatures and a brief biography of each of the hundred presidents of the American Medical Association. This feature has been prepared by Dr. Walter L. Bierring.*

It will be impossible to publish all of the material in THE JOURNAL. *The complete work will be published in book form. It is hoped to have it available by the time of the annual session.*—ED.)

CHAPTER 13. *The Journal Gains*

1885

Almost forty years had passed since the American Medical Association had been organized at Philadelphia. In the intervening period the Johns Hopkins University had been founded; bacteria had been grown on artificial mediums; Alexander Graham Bell had introduced the telephone, for which many doctors' wives would curse him roundly in the years that were to come.

The gonococcus was discovered by Neisser in 1879, and Pasteur isolated the streptococcus and the staphylococcus in 1880. Every one of these discoveries was to be reflected within a few years in the discussions of the scientific sections of the American Medical Association.

Dr. John Shaw Billings had taken a considerable part in the work of the American Medical Association, particularly in its Section on State Medicine (which we today would call public health). In 1880 John Shaw Billings published the first volume of the *Index Catalogue*, the first attempt to index regularly the medical periodical literature of the world.

In 1880 also the American Surgical Association was founded, the first society devoted exclusively to specialists. Only a few years before there had been many discussions on the rights of specialists compared with the rights of general practitioners. The economic, scientific and social aspects of specialization in medicine were to attract increasing attention and to become major subjects of medical discussion as the years rolled by.

With the discovery of bacteria and of first antiseptic and then aseptic surgery the surgeons began increasingly to invade portions of the body never before accessible. In 1881 Billroth resected the pylorus, and in the same year Czerny described vaginal excision of uterine tumors and Hahn removed a kidney. In 1882 Robert Koch discovered the tubercle bacillus.

The scientific papers read before the sections of the American Medical Association began increasingly to attempt to reconcile the newer knowledge of germs in the causation of disease with the weird and sometimes mystical classifications of disease that had characterized previous excursions by the medical profession into the problems of disease causation.

THE NEW ORLEANS SESSION

As 1885 dawned THE JOURNAL for January 3 of that year apologized because the last issue for December of 1884 had appeared late. A single galley of proof had been tied up somewhere in the Christmas rush in the postoffice, and the list of members had taken two pages more than had been anticipated because of the increase in membership.

There was still some argument as to whether or not diphtheria was a contagious disease. Indeed, in the light of *post hoc* knowledge, some of the discussions of the 1880's seem bizarre indeed. There was quite a battle over the question of whether or not a solid stethoscope would convey sound better than a hollow one.

THE JOURNAL was beginning to make its presence felt on the medical profession. The interest in the American Medical Association was increasing. Sectionalism was developing in American medicine; it was to be the source of much anguish and misunderstanding for years to come. These misunderstandings reflected in some instances the thirst for prestige and power by the publishers and editors of some of the Eastern medical journals.

Another source of disturbance was the practice of the homeopathic system and the bitterness against homeopathy manifested by such leaders as Oliver Wendell Holmes. The powers in the American Medical Association felt that the abandonment by the New York State Medical Association of principles of ethics concerned chiefly with consultations by members of the Association with physicians who adhered to peculiar medical beliefs was a direct thrust at the foundation stones of the Association itself.

THE JOURNAL

In March 1885 N. S. Davis gave account of his progress with THE JOURNAL. He informed the readers that he had told the Board of Trustees that "under no circumstances" would he extend his work as editor beyond the current year. Less than two years had passed since the first number of THE JOURNAL was issued. There had been continuous growth of the membership, which had increased from 1,428 in 1875 to 3,887 in 1885. The *British Medical Journal*, cited everywhere as the foremost publication in medicine, had been founded in 1865 and had achieved by 1885 a circulation of 12,000.

In a later editorial the editor noted how greatly THE JOURNAL had aided in hastening the publication of important contributions made at the annual session and how well it had reflected the general progress of medicine in the United States. The annual income of the American Medical Association had risen from $5,008 in 1879 to $13,017.25 in 1884 and to $18,117.25 in 1885. The Association was thus quite solvent: its

income just about balanced its budget. We see later that this balancing was made possible by the failure of the editor and of some of his helpers to collect any income whatever for their work. In a final editorial on the current situation, Dr. N. S. Davis pointed out that he had been unable to employ necessary help because of inadequate funds in the treasury and that the printer had been willing to postpone some of the payment on his account. "By deferring all pay for his own services, and limiting thus the number of paid assistants, he conserved enough in the treasury to pay all publication expenses promptly and at the end of the year from the later collections received for himself a reasonable remuneration for the editorial work performed and left a surplus sufficient to pay the other current expenses of the Association."

The editor had been disturbed by the fact that members who had contributed papers, reports and addresses had failed to send them promptly to THE JOURNAL in accordance with the By-Laws. Other medical periodicals had had access to this material and they had taken away its journalistic newness by publication of abstracts before there was opportunity to publish the material in THE JOURNAL. Dr. N. S. Davis then established the policy that the address of the President of the American Medical Association should be published in the week in which he delivered it and the chairman of the individual sections would have their addresses published in THE JOURNAL each week that followed.

In the first editorial for April 1885 the editor discussed at considerable length the problems of printing involved in publishing THE JOURNAL. There were attempts to turn over the publication to commercial publishers and thus to take it away from its direct control by the Board of Trustees. Dr. Davis felt that it was time to fix the place of publication for a term of years and to purchase necessary printing equipment so that the composition of THE JOURNAL would be the work of the Association, although the press work could be done elsewhere. Dr. Davis urged the establishment of its own press by the Association because he felt certain that this would lead eventually to a much better publication and to complete control by the organization itself.

Another sign of growing pains was the introduction of several resolutions having to do with the membership in the Association and with membership on the nominating committee. There was naturally some objection to having members of the nominating committee nominate themselves to important offices.

The meeting in 1885 at New Orleans heard an address by the President, Dr. Henry F. Campbell of Augusta, Ga. Southern oratory rolled in resounding phrases. Thus he spoke of the passing of S. D. Gross and J. Marion Sims:

> With shining robes more honorable than any toga of office we can put upon them, with crowns more resplendent than those of earthly monarchs, and with harps and melodies more entrancing than the music of our love or the anthems of our praise, they hear no more the voice of human adulation.

However, after some pages of this fluorescent diction Dr. Campbell turned his attention to serious criticism. He praised the development of THE JOURNAL. He poured satire on professional testimony in the courts and on the lawyers who cross examined the medical witnesses. He urged the establishment of a section devoted to forensic medicine.

THE ARMY LIBRARY

Dr. John Shaw Billings reported the complete success of the effort to obtain an appropriation from Congress for fireproof buildings for the Army Medical Museum and Library, and he announced that the building operations would soon be commenced. The building, reported first in 1885, still stands in Washington in 1947—a veritable firetrap—holding in its bursting walls millions of books and pamphlets of incalculable value while members of the medical profession and of innumerable other agencies urge the Congress again and again to make adequate appropriation for the building of a modern structure worthy to house the treasures whose existence is threatened every moment by the inadequacy of the old building that now contains them.

THE EDITOR

The Board of Trustees announced that it had earnestly requested Dr. Davis to withdraw his resignation and to continue his relations with THE JOURNAL as its supervising editor. His sense of duty impelled him to suspend his resignation and to yield to the unanimous request of the Board to continue his editorial superintendence of THE JOURNAL until such time as a successor could be appointed.

THE BENJAMIN RUSH MONUMENT

The House of Delegates had been intent on developing funds for the monument for Benjamin Rush to be unveiled at the meeting of the International Medical Congress which would be held in 1887. Some $45,000 was needed for this purpose and it was to be collected by a maximum contribution of $1 from each subscriber; the monument would be erected in Washington. The committee called attention to the manner in which statesmen, military heroes and naval heroes had been honored with monuments as had also painters, sculptors and various scientists.

Benjamin Rush received his A.B. degree from Princeton when less than 15 years old. He studied medicine with John Redman in Philadelphia for six years and translated the aphorisms of Hippocrates from the original Greek. As a student when only 17 he had described the epidemic of yellow fever that prevailed in Philadelphia. After obtaining his degree of doctor of medicine at Edinburgh in 1766 he studied in London and in Paris and returned to the United States in 1769. He was one of the signers of the Declaration of Independence. Benjamin Rush was one of the surgeon generals in the Army of the Revolution and a member of the convention that adopted the federal Constitution, which he called "a masterpiece of human wisdom."

In 1789 he succeeded Dr. Morgan in the chair of theory and practice of medicine in the Medical College of Philadelphia. Once the federal government was established, he devoted himself wholly to his profession and to civic affairs. The only office which he accepted as a reward for his many government services was the position of president of the mint, which he held for fourteen years. He was one of the vice presidents of the American Philosophical Society; he aided in found-

ing Dickinson College; he was president of the American Society for the Abolition of Slavery. Benjamin Rush died in 1813 at the age of 68 as a victim of an epidemic of typhus.

1886

ST. LOUIS

Early in 1886 attention was called by THE JOURNAL to the crowded character of the program of the American Medical Association. The difficulty was that the addresses of the chairmen of the sections were taking too long in some instances and not long enough in others. This agitation was to culminate in the eventual divorcement of the reading of the chairmen's addresses from the general meeting and the limitation of such addresses to the sections themselves. This divorcement, however, was another step in the tendency toward specialization, since its inevitable result was to limit the consideration of special topics to the specialists and to make impossible their delivery to the general practitioners, who might be said to need them most.

There was also some criticism of the attempts to build a program by the voluntary offering of papers. The chairmen and secretaries were urged to invite contributions from competent authorities on important subjects so that there would be at least one or two leading papers in each section and at least one or two equally qualified members to open the discussions of the papers.

One cannot but pause to marvel again at the insight and organizational ability of Nathan Smith Davis. As one views the progress and development of the American Medical Association and the elements in its activities which have obtained permanent status, one finds again and again that the concept arose in the mind of Dr. N. S. Davis, that it was presented by him so clearly and succinctly as to carry conviction and that he fought for these steps in progress with a persistence and sincerity that led inevitably to their success.

BATTLE OVER THE INTERNATIONAL CONGRESS

The jealousies of which mention has been previously made flared into public view early in 1886, when the editors of some of the Eastern medical journals denied the right of the American Medical Association to participate largely in the formation of a forthcoming International Congress of Medicine to be held in Washington. These Eastern editors endeavored to sabotage the American Medical Association's committee and tried to deter members of the profession from accepting any official positions in the preliminary organization of the congress. In an attempt to overcome this opposition, places on the national committee were offered to the most eminent of those in the opposition. The battle waged so fiercely that attempts were made to control the election of delegates to the meeting of the American Medical Association with a view to mustering a majority at the meeting in St. Louis. These efforts also failed.

Mingled with this controversy was the question of the status of the homeopathists. Apparently foreign countries had admitted homeopathists to their delegations and it was desired that homeopathists be admitted to the American delegation. Then arose the question of admitting not only homeopathists but also eclectics, physiomedical graduates, hygiotherapeutic graduates and those of some other schools. To settle the difficulty, an official announcement by the American Medical Association made it clear that any legally acknowledged practitioner would be admitted to the congress.

Much of the attack centered on Dr. John Shaw Billings, as secretary of the original committee of seven which was planning the congress. The American Medical Association called on him to explain exactly what he and his committee really did expect of the Association. The original committee of seven had been commissioned to go to Copenhagen in 1884 and to invite the International Medical Congress to meet in the United States. A somewhat satirical comment in THE JOURNAL stated that "they satisfactorily performed this office and through their spokesman promised the members a generous welcome, he pledging himself to do a variety of things without reservation (expressed, at least), as to the contingency of his not being allowed to have everything his own way."

Apparently there were a good many political appointments made to positions of distinction, and there was general resentment against these actions and attitudes.

MEDICAL ORGANIZATION

In the meantime there began to be repercussions in Philadelphia over the charge of political manipulation of its delegation to the American Medical Association. A secret caucus had been held for the nomination of delegates, and the members, having discovered this fact, began to be resentful. Some of these discussions led the editor of THE JOURNAL, Dr. N. S. Davis, to publish an editorial in the issue of Feb. 27, 1886 urging the possibility of reorganization of the American Medical Association along the lines of the British Medical Association with the fundamental principle of membership in a county and state medical society as a basis for membership in the American Medical Association. The decision to organize the American Medical Association along such lines had caused the organization of state medical societies where none existed and had caused the reorganization of state medical societies which had been allowed to die. The editor pointed out that the admission of two delegates from the faculty of each medical college and one from the staff of each hospital, lunatic asylum and dispensary not only gave these medical men a much larger number of delegates but removed from them the incentive to become members and to officiate as members in their own state medical societies. Ultimately this change in the method of organization was to be one of the most important single influences in building a strong democratic representative body.

This editorial led to an extensive correspondence objecting to the organization of the American Medical Association with branch societies as is done in Great Britain and insisting that the system whereby the state medical societies constitute the real branches of the organization was a proper one for a country such as ours. The organizational technic of N. S. Davis is nowhere better manifested than in this practice of writing an editorial to stimulate discussion in the correspondence columns, reactivating discussion by further editorials when it tended to die and thus maintaining the interest of members of the Association everywhere in the problems of its conduct.

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As might be expected, however, there were certain definitely disorganizing influences which arose from this discussion. One finds an attack on a former President of the American Medical Association as being a man who did not merit the position but who was elected to it only for his political influence. There was an editorial in the *Nashville Journal of Medicine and Surgery* in February 1886 which was reprinted in the *Medical News* of Philadelphia, claiming that the American Medical Association was a body merely medicopolitical, full of political intrigue and trickery. There was an attack on this editorial accusing the editor of the *Nashville Journal of Medicine and Surgery* of having "the effrontery to parade such intentions before an intelligent profession." The political battle being waged in editorials and in correspondence was moving into the stage of hand-to-hand conflict at the next annual session of the American Medical Association.

SOCIAL FUNCTIONS

In April 1886 Dr. Davis was again moved to turn his attention to the social functions at the annual session. He expressed his appreciation of the meeting in Boston in 1849, when "one evening was set apart for a general social mêlée or promenade in a public hall for the laudable purpose of affording more direct social intercourse of members from all parts of the country. With genuine good taste the local committee provided no other refreshments than coffee, simple cakes and fruit on a side table where those who wished could partake when they pleased. But this simple and very pleasant example was quickly converted into the form of a public banquet, which each subsequent local committee of arrangements endeavored to make more magnificent and costly than their predecessors, until at New York in 1853 the banquet alone was said to have cost more than $10,000; and the next year at St. Louis its extravagance and the excesses accompanying it led to the adoption of a resolution offered by the late Professor S. D. Gross forbidding all subsequent committees of arrangements to provide any public banquet in connection with the annual meetings of the Association."

This multiplication of official functions and similar jamborees led eventually to the adoption of a general rule that each alternate meeting should be held in Washington and that the necessary expenses for halls and programs should be met by the Association.

THE ST. LOUIS SESSION

When the Association convened in St. Louis it was announced that protests had been entered against the delegates from the Philadelphia County Medical Society, the New York Academy of Medicine, the Tri-State Medical Society, the Mississippi Valley Association and the Davidson County Medical Society, and one Tennessee doctor protested against the Tennessee State Medical Association.

The meeting in St. Louis brought an attendance of 1,100. The address of the President, Dr. William Brodie; paid tribute to the great men of the profession who had died during the year, among whom was Dr. Austin Flint. Dr. Brodie told of the effectiveness of the Association in raising the standards of medical education. He listed the prize essays as an indication of its scientific contribution. He noted the organization of special societies, of ophthalmologists, otologists, gynecologists, dermatologists, public health officers, laryngologists, surgeons and pathologists. Thus the rise of specialization had been exceedingly rapid. It was Dr. Brodie's opinion that nothing could be gained by changing the nature of the American Medical Association to resemble that of the British Medical Association with its branches. He forecast a feeble reception for the report of the committee of the ninth International Medical Congress and he pleaded with those who had fought the committee to give it their full support.

Apparently the spade work preliminary to the convention had been well done. The report of the committee was, on motion, received and adopted with enthusiasm and without an audible negative vote by the entire convention with almost a thousand delegates in the hall. Indeed the editor of THE JOURNAL was delighted to report complete harmony, whereas two months previously every one seemed to be sharpening his knife in readiness for the conflict.

The committee on organization of the International Medical Congress in 1887 made its report suggesting the name of N. S. Davis of Chicago for president and John B. Hamilton of Washington, D. C., as secretary general. The vote was recorded as unanimous. A motion offered by a Pennsylvania delegate to reconsider this motion was laid on the table.

At this session of the Association an amendment was adopted that each section should nominate its own officers. The establishment of a section on dermatology and syphilis was approved.

The business committee, acting as a reference committee, endorsed the views of the President that all papers read in the annual session should become the exclusive property of THE JOURNAL; it asked the Judicial Council to take action against members who introduced proprietary remedies and appliances. It recommended the appointment of a committee to study reorganization of the Association. A resolution was adopted that the Association approve cremation or incineration of the dead as a sanitary necessity in all populous cities.

The meeting was notable for the presence of General William Tecumseh Sherman, who entered the room and sat on the platform during the fourth day of the session.

The Trustees reported on THE JOURNAL and then asked Dr. N. S. Davis to make an individual report. Dr. Davis expressed his dissatisfaction with the income from advertising and some defection in subscribers. These included, first, those disaffected by the New York New Code party and later the opponents to the organization for the International Medical Congress. Notwithstanding these defections there had been a total increase in members and subscribers. Dr. Davis had consented to remain as editor, and the Trustees expressed their confidence that the experiment in publishing THE JOURNAL was fully warranted and that some day it would prove that their experiment was sound.

The difficulties over delegates in this convention were thoroughly analyzed by the Judicial Council, which made its report on the final day of the session. The delegates from tristate societies were considered not entitled to admission, since the Association recognized only the state societies and the county, district and local societies affiliated with the state societies. It

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asked the Davidson County Medical Society in Tennessee to show up next time with some credentials which would prove its connection with the Tennessee State Medical Society. The evidence against the Mississippi Valley State Medical Society was found insufficient for consideration. The Judicial Council found also that the delegates from the Philadelphia County Medical Society had been elected by methods which were of such an irregular character that the delegates would have to be rejected. The Judicial Council authorized the return of the dues of these delegates.

When the meeting was over and the delegates had returned home, the *Medical Record* of New York published some editorial comments calculated to create the impression that this meeting of the American Medical Association was not really representative and that the action of the Judicial Council relative to the delegates from Philadelphia had started a serious split in the American Medical Association. To this the *Philadelphia Medical and Surgical Reporter* replied "It is hardly fair to speak of a split when only a few fibers are carried away; it would be more correct to say a shave or a scrape. The main body of the American Medical Association is today more united than it ever was, and it has lost the allegiance only of those who 'got mad' because they could not control." The editorial in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION proves that the attendance was most representative and that there was little danger that a proposed congress of American specialists "constructed from a union of half a dozen American specialist organizations could take the place of the Association."

1887

CHICAGO

In January 1887 the students of the Chicago Medical College presented N. S. Davis, in honor of his fifty years in medical practice, with an armchair and a revolving bookshelf. Such a piece of furniture as the revolving bookshelf is still found in one of the offices of the headquarters of the American Medical Association and is probably the very one which was presented to N. S. Davis at that time. In the history of medicine such gifts represent one of the finest amenities in medical relationships. In the same year Dr. J. Adams Allen, commonly known as "Uncle Allen," was presented by the students of Rush Medical College with a "tripod" consisting of a fat, chubby hand, made of solid gold. It was set on an onyx pedestal on which was inscribed:

UNCLE ALLEN'S TRIPOD
Remember these three
When we practice the art:
The condition of blood,
The nerves, and the heart.

This quotation was a verse of the college song at Rush based on some of Dr. Allen's sayings. The hand was in the position that he usually held when addressing the students.

The editorials in THE JOURNAL were increasingly devoted to scientific subjects, with less attention to problems of organization and representation. Dr. Davis was disturbed by the unsatisfactory reporting of the discussions in the sections, urging the reporters to give in greater detail the statements made by those who discussed the individual papers.

A SPECIAL ISSUE OF THE JOURNAL

As the time approached for the annual session, THE JOURNAL issued a special number in an extra large edition giving the program of the meeting and full information as to its various features. Members of the Association were requested to visit the publication office to see how well THE JOURNAL was getting along, and the members were promised four more pages of reading matter with each issue during the coming year.

As the time neared for the meeting of the Association, the members were again reminded that the business office at 65 Randolph Street was open at all times and that a clerk would be present at all times to welcome them. THE JOURNAL printing office was at 68 Wabash Avenue, only one square from the Central Music Hall, where the Association was to meet and where extra volumes of the Transactions published prior to 1883 were to be found for sale.

The President of the Association, Dr. Elisha H. Gregory, read an address on "Cell Antagonism" which differed from every previous address in being a highly technical review of knowledge of the cell. He concluded his address by calling attention to the near approach of the International Medical Congress and by requesting all members of the American Medical Association to participate and entertain properly the numerous delegates from abroad.

The Board of Trustees reported that THE JOURNAL had been well published with the operation of its own press and that Dr. N. S. Davis had consented to continue its management. The Association now owned several fonts of type. There seemed to be a small increase in its subscription, but this was due to the fact that 524 subscribers had been added while 244 had been removed for nonpayment and for other reasons, including death.

Again attention was called by N. S. Davis to the fact that the Code controversy in New York and the battle over the International Congress had resulted in considerable damage to the Association's membership. However, these two revolts had spent their force and there had been recently increased applications for membership and renewals of subscriptions—more, in fact, than at any previous time since THE JOURNAL had been established. Dr. Davis urged again an expansion of THE JOURNAL printing office and he gave credit particularly to Dr. William G. Eggleston as assistant in editorial work and to Mr. J. Harrison White, who was both foreman and printing office and advertising manager.

CHANGES IN ORGANIZATION

Most important at this session of the Association was the report of the special committee on changes in the plan of organization and by-laws. The proposed amendments included changes in the technic of choosing members, the elimination of the nominating committee and the substitution of a general committee, the elimination of the committee on publication and the substitution of the Board of Trustees, the choice of chairmen in the individual sections by election in the sections and the new method for choosing those who were to give the annual addresses in the sections. The report of the committee was adopted. As an indication of the difference of opinion, however, a standing vote was taken on the adoption of this reorganization and the final vote was 274 for and 232 against. A roll call of the states established a committee on nominations with a representative from each state.

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THE RUSH MONUMENT

An extensve report was presented by the Rush monument committee including a statement by its secretary and by its treasurer. The committee had made a very minor start on the total of $45,000 which it had started to collect. The total sum which had been sent to the treasurer was $389, and the committee had spent $143.08 on its expenses.

THE ANNUAL DINNER

As this session neared its end, several resolutions were offered which were again fundamental to the progress of the Association. One had to do with the holding of an annual dinner in which there were to be two kinds of tickets, one without wines or liquors and one with wines or liquors, so that any members of the Association could come to the dinner and not drink without feeling that he was paying for the liquor that was drunk by others. This resolution was adopted by a large majority.

THE FINANCIAL CONTROL

A resolution was offered appropriating an honorarium of $300 to the permanent secretary. To this Dr. Davis offered an amendment to the effect that the Board of Trustees be a standing committee on finance to which all propositions for the appropriation of money should be referred and reported on before final action on the same by the Association. This simple resolution, which arose out of a motion to pay a small honorarium to the permanent secretary, was probably more significant in the financial prosperity of the American Medical Association as it exists today than any other action taken up to that time.

1888

CINCINNATI

The first volume for the year 1888 indicates that THE JOURNAL was edited for the Association by N. S. Davis, assisted by William G. Eggleston and N. S. Davis Jr.

A NATIONAL DEPARTMENT OF HEALTH

Early in the year THE JOURNAL began to agitate for a national department of health, with particular reference to a national department for the control of adulteration of foods. This, it must be remembered, was 1888. The United States does not yet have a national department of health, although it has the U. S. Public Health Service. It required the action of Theodore Roosevelt and the publication of books by Samuel Hopkins Adams called "The Great American Fraud" and by Upton Sinclair called "The Jungle" to obtain a national law that would regulate the purity of foods and drugs.

THE GENERAL MEETING

Arrangements began to be made for the next meeting of the Association in which the addresses of the chairmen would be read before the sections rather than before the general assembly. However, arrangements were made for three important addresses before the entire assembly, forecasting the modern period with the general scientific meetings, in which three complete sessions are given over to general statements reflecting the advancement of medical science.

RIGHTS OF A DOCTOR IN HIS CLINIC

The editor of THE JOURNAL was also a little annoyed because medical reporters had begun attending clinics in hospitals and selling them to Eastern medical journals. Indeed, one reporter had annoyed the editor considerably by selling three of the editor's lectures in this manner without even allowing him to see the reports as first transcribed or to read the galley proofs. A Chicago judge gave a bench opinion to the effect that such activities were illegal and that redress could be had by resort to the courts for this piracy of medical literary material.

KNOWLEDGE OF DIPHTHERIA

An editorial in the issue for March 31, 1888 pointed out that a member of the Association disagreed with the editor, who had said that diphtheria was a preventable disease. He asked the editor to explain how he would go about preventing diphtheria. The editor, after some elusive discourse on the subject, said that "diphtheria, erysipelas, cholera, yellow fever and some other diseases evidently depend on specific infections developed outside the human being and capable of being introduced into it in connection with the air we inhale or the food and drink we take. Hence our formula for the prevention of diphtheria does not consist of drugs to be obtained at the apothecaries, but of an abundance of pure air, good water, wholesome food, clean soil, and a clear personality." In the light of modern use of antidiphtheria toxoid, this formula can be viewed only with praise for its sincerity. Just a few weeks passed until the editor had to write on the subject again. A member had suggested that probably isolation and disinfection should have been mentioned. Here the editor did a brilliant piece of open field running by pointing out that any family that was as clean as he had proposed would have nothing to isolate or disinfect. It was his idea that isolation and disinfection are performed only after infection has already occurred and that therefore they have little to do with the prevention of infection.

DRESS REFORM

About this time a prominent German professor became convinced that gallstones and tight lacing had a definite relationship. The editor of THE JOURNAL rather doubted that there was a true causal relationship but he was inclined to think that perhaps it was just frequent coincidence. He pointed out that the tight lacing goes on during the day and is loosened up at night. However, he felt that persistent tight lacing could cause a change in the configuration and that probably after all some cases of gallstones and perhaps also cancers of the gallbladder were due to tight lacing. Incidentally, a few pathologists had found the liver completely deformed by the tight stays of the corset of that day. It is not surprising then to find that Dr. Helen L. Betts of Boston read a paper before the Gynecological Society of Boston in December 1887 on the dress of woman and its relationship to the etiology and treatment of pelvic disease. Dr. Helen Betts was an advocate of dress reform. She wanted women to get rid of all the clinging garments with which their bodies were enveloped and she wanted them to get some exercise and outdoor life similar to that permitted to boys. She attributed congestion of the internal organs of women to their clothing and their habits. She cited a case from her own practice in which she felt that this was the primary trouble:

> The first, clearest indication seemed to remove the superincumbent pressure; so, as usual, I examined her mode of dress. You will be interested from a professional standpoint to know what this patient wore. I examined her at her home, so she had on simply her indoor garments. There were knit and muslin drawers, flannel and muslin underskirts, hoopskirt and

bustle, then a muslin and a dress skirt, seven bands; fourteen thicknesses were buttoned closely about the corset, and, not long before, her physician, having noticed that she wore her garters about her legs, said he feared they would interfere with circulation and advised that she should put an elastic band about the waist and fasten the stockings to this! I asked if her clothes were not oppressive. She said she thought she wore very light clothing but had noticed at night a purple crease about the waist where the bands came about the corset and wondered if that could keep her from gaining strength. With all this weight and compression this poor woman was waiting to get well, wondering why she could not stand, that her limbs ached and prickled, and why she could not walk without getting so tired. Neither physician nor specialist had spoken of her mode of dress.

And Dr. Betts went further by pointing out that the men doctors simply did not know about these things because the men themselves had never submitted to that kind of clothing.

The meeting in Cincinnati heard an address by Dr. A. P. Y. Garnett which was a fine analysis of the medical education of the day, a brief review of the International Congress and an urge to participate in the building of the Rush monument.

The editor of THE JOURNAL told his readers that he would have the official minutes in the following week and he begged them to disregard the inaccurate, hasty and imperfect reports of the meeting that had been published by the contemporaries. The personal journalism which was characteristic of that day had invaded the field of medical journalism. Dr. Davis was much annoyed with the telegraphic reports from the convention in Cincinnati to the New York medical periodicals. He did not see the reason for all the hurry. "No one," he said, "can possibly object to an accurate report of the business meeting of the Association, but as the matter now is, it usually takes some months to correct the inaccuracies of one week's issue of some of our electric contemporaries. Inaccuracy is neither condoned nor corrected by telegraph wires, notwithstanding the marvelous therapeutic properties of electricity."

"PATENT" MEDICINE ADVERTISING

At this meeting there came a resolution from the Arkansas State Medical Society condemning the religious press of the nation for its continuous endorsement of "patent" medicines and the fact that the religious press published "serious homilies on prayer and praise side by side with cures for consumption, cancer, Bright's disease and other incurable ailments."

THE RUSH MEMORIAL

The committee on the Rush memorial reported that it knew that every doctor wanted to give a dollar but that the dollars had not been forthcoming and that they had not found out how to get them. The committee, which had started out to get $45,000, had got $392 the first year and $498 the second year but it had now had an expenditure since the last report of $34.73. Some of the state medical societies had made contributions—notably $500 from Pennsylvania—which had paid $100 on account, and $100 had been promised from Michigan but had not yet shown up in the treasury.

TOO MANY SOCIETIES

As the year ended there began to be agitation against the number and variety of medical societies. The difficulty seemed to lie in having too many special societies which were detracting from the national organization. These special societies were apparently not only taking away the harmony from the national organization but also interfering with pronouncements of policy. The *New Orleans Medical and Surgical Journal* of November 1888 said:

> What will be the final effect upon the American Medical Association of the various associations of so-called *specialists*—the American Surgical Association, the Association of American Physicians, the Gynecological Association and all the others? It will be a sad day for the profession of America when the time-honored A. M. A. ceases to be *the* medical institution of the country.

Dr. N. S. Davis charged that those who had taken part in one or more of these specialists organizations and who had actively promoted the combination of all these in the so-called Congress of American Physicians and Surgeons had been actuated by the desire that the latter should ultimately displace and supersede the American Medical Association. He felt that the leaders in the specialties had never been satisfied with the liberal organization of the American Medical Association. Some of them had tried to restrict the whole business and management of the Association to a council of limited number capable of self perpetuation instead of the representative plan based on the state and local societies. He attacked these specialists for devoting themselves to their special societies rather than giving the major portion of their attention to the sections of the American Medical Association. Too, he was certain that after all the sections of the American Medical Association would triumph because the specialists must depend for much of their patronage on personal contact with the general practitioners and he concluded:

> Instead of the circle of American associations of specialists, accommodating in the aggregate less than 500 of the 50,000 or 60,000 members of the regular medical profession of the United States, having any serious tendency to supersede the American Medical Association, it will only serve as a convenient and really useful place in which the small but respectable class of exclusionists can work and dine without personal contact with the sunburned and weatherbeaten general practitioners of the healing art.

In THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for Nov. 24, 1888, appears this significant notice:

EDITORIAL CHANGE

> Having accomplished all that he had hoped or expected to accomplish when he accepted the editorship of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION in 1883, and feeling the necessity for diminishing his responsibilities and constant work, the Editor of THE JOURNAL tendered his resignation to the Board of Trustees in the latter part of June last, the same to take effect on the 31st day of December 1888. At a special meeting of the Board of Trustees held in Chicago Nov. 9 and 10, 1888 the resignation was accepted, and John B. Hamilton, M.D., Supervising Surgeon General of the Marine Hospital Service and late Secretary General of the ninth International Medical Congress, was chosen unanimously to fill the place. He will enter upon the discharge of his editorial duties Jan. 1, 1889. We trust he will have a long and prosperous editorial career.

Thus apparently ended the visible leadership of Nathan Smith Davis. But it was only apparent! A study of the minutes of the Association and of the Board of Trustees during the continuing years proved that, as long as there was in him spirit and life, N. S. Davis was wholly devoted to the American Medical Association and its progress.

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NEWPORT, R. I.

Prophetic indeed was a little note that appeared in the editorial column of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for Jan. 12, 1889. It said:

There are a little more than eighty thousand persons practicing medicine in the United States, of whom more than sixty thousand are regular practitioners. When one third of the regular profession are members of the American Medical Association we can have the strongest organization and the best medical journal in the world.

As the Association faced its hundredth anniversary in 1947, there were about 190,000 physicians in the United States, and of these about 130,000 were members of the American Medical Association. THE JOURNAL had reached more than 130,000 subscribers, a figure representing more circulation than the ten next weekly journals of medicine in the world combined.

In 1889 the British Medical Association was in excellent financial condition. It occurred to the editor of THE JOURNAL to make some comparisons and to point out that a technic like that by which the British Medical Association was organized would be of vital importance to promotion of THE JOURNAL. Yet from various places in the United States came a variety of suggestions, one urging frequent meetings in Washington and the beginning of the first agitation for moving the headquarters of the American Medical Association to that city. The suggestion has never quite died. Again and again it reappears in the various motions and promotions frequently supported by the belief that in some manner the location of the headquarters of the American Medical Association in Washington would result in a sort of influence on the legislative and executive leaders that cannot be secured by any less intimate contact.

THE EDITOR OF THE JOURNAL

It will be remembered that the Board of Trustees of the American Medical Association accepted the resignation of Dr. N. S. Davis at the end of 1888. Dr. John B. Hamilton was elected to succeed him. He served as editor only from January to February of 1889; then he resigned the position for reasons which he stated succinctly in an editorial published in the issue of February 9. At that time the committee on general management, which was the Board of Trustees, took over control of THE JOURNAL.

EDITORIAL NOTICE

When the writer accepted the position of Editor of the Association JOURNAL, although the Marine Hospital Service bill was then pending, as it had been for the past ten years, he had no certainty of its passage, but, on January 4 it passed both houses of Congress and became a law, which by prohibiting any original appointments into the service except to the rank of Assistant Surgeon, has the effect of creating a life tenure in the office of Supervising Surgeon General. He therefore tendered his resignation as Editor to the Board of Trustees and it was kindly accepted by them to take effect on a day named by himself. His editorial connection with THE JOURNAL will therefore cease with the present number, and until further notice the "Committee on General Management" will take charge of the affairs of THE JOURNAL. With the most sincere thanks to those who have sent him kindly letters, his best wishes for the continued success of THE JOURNAL, and the renewed prosperity of the Association, the Editor assumes his life work in the Marine Hospital Service.

JOHN B. HAMILTON.

John B. Hamilton was born in Jersey County, Ill. Dec. 1, 1847, the year in which the American Medical Association was founded. He graduated from Rush Medical College in 1869. Following his graduation he entered the Marine Hospital Service and rose rapidly to the rank of Supervising Surgeon General. His surgical skill won for him a position in Rush Medical College, where he became professor of the principles of surgery and clinical surgery. He obtained special recognition for his operations for hernia and for his skill in surgical diagnosis.

In "American Medical Biographies," edited by Howard A. Kelly and Walter L. Burrage, appears the statement that THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION was never more successful than under his four years of editorship. His second term as editor began in 1893. This first period occupied just two months.

In 1889 Dr. Oliver Wendell Holmes gave his private library to the Boston Medical Library. THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION recognized the occasion with special editorial notice and suggested to the members of the Association that they might have opportunity to meet the great American author and physician at the next meeting of the Association, which was to take place in Newport, R. I.

PROGRESS IN OBSTETRICS

Significant of the progress of medical science in that year was a lecture given to the Chicago Medical Society by Professor W. W. Jaggard of the Chicago Medical College. Jaggard was one of the greatest teachers of his day. Dr. Joseph B. De Lee derived from him the interest toward improvement in obstetrics which became his life work. The article on "The Prevention of Puerperal Fever" is a demand for thoroughgoing cleanliness which came closely on the demonstrations by Semmelweis and the argument of Oliver Wendell Holmes. Curiously, however, at the conclusion of his article Dr. Jaggard warned physicians to make sure that the woman who was giving birth should not be placed in a room in which there was "communication with the sewer, since vitiated air is unwholesome under all conditions of human life." He called attention, however, to an aphorism of Kucher, "I would be less frightened by the bursting of a sewer pipe during labor than by the use of a suspicious sponge or an unclean rag on the external genitals." And as a final conclusion, Dr. Jaggard said "These rules are simple and easy of application as well in private as in hospital practice; as well on South Halsted Street as on Calumet Avenue." It would interest Professor Jaggard, should he return today, to discover that South Halsted Street has now improved considerably over Calumet Avenue!

Following the resignation of Dr. John B. Hamilton, THE JOURNAL was issued by the Board of Trustees with the advice of N. S. Davis until June 26, when Dr. John H. Hollister of Chicago was elected editor.

PROGRESS OF THE ASSOCIATION

Toward the end of the year THE JOURNAL began a campaign for better control over licensure to practice in the individual states. The editor published a brief review of forty years in the history of the American Medical Association and he listed the following five chief accomplishments of those forty years:

"First. By the early adoption of a Code of Ethics which commends itself to the approval of all medical men, it has

clearly defined the rules that should govern, not only among members of the profession, one with another, but also their relations with the people.

Second. It has fostered fraternal fellowship and helped to bring into close and friendly relation the medical men of all parts of this broad Union.

Third. It has always been the earnest advocate of a higher standard of medical education and in every way possible has sought to stimulate original investigation.

Fourth. Its influence has always been helpful to our medical colleges—and it has favored the maintenance of medical societies, both state and local, everywhere.

Fifth. For the purpose of assuring the closest possible relations with the masses of the profession—it even commits its own management to their delegates, as they shall come fresh from the local societies to express their will, from year to year, rather than to permanent members, who might in time misrepresent their constituencies.

The Association is in accord with the genius of American institutions. It is national in its representation and never sectional in interests. It is in no sense exclusive and yet makes ample provision for those who by reason of talent and culture may best serve the profession as instructors and guides. . . . "

In June the editor discovered that some one, taking advantage of the forthcoming annual session of the American Medical Association, began soliciting advertisement for something called "The American Medical Association Annual." It became necessary for the Association to disavow publicly any association with this dubious financial enterprise.

THE SPECIAL ISSUE

THE JOURNAL itself was, however, embarking on a financial enterprise to signalize the occasion that amazed the American medical publishing world. In anticipation of the 1889 convention THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION issued an edition of 75,000 copies and mailed one to every physician in the United States. Its purpose was to attract a large number of physicians to the annual meeting in Newport. The other medical periodicals of the country paid compliments to the special issue. One contemporary called attention to the fact that THE JOURNAL was under temporary management and suggested that the Association could scarcely do better than to make the present arrangement permanent.

The final issue of the twelfth volume carried a plea for the sufferers from the Johnstown flood.

The next volume opened with the address of the President of the Association, Dr. W. W. Dawson of Cincinnati. He was concerned with the quality of medical teaching in the United States; with the quality of the young men who were to become medical students; he recognized that there would always be some doctors who were not as good as most of them. The University of Texas had just been liberally endowed. The universities of Virginia, Harvard, Yale, Princeton, Columbia and Cornell and the University of California had made enviable records, but there were now in the United States more than a hundred medical colleges and there was a feeling that medical colleges had increased too rapidly.

President Dawson urged an expansion of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and a drive for more members. Great praise he poured on the Army Medical Library and Museum and on John Shaw Billings and his development of the *Index Catalogue*. "The medical profession," he said, "asks very little of the general government but it does ask that these two institutions shall be made as useful as possible." He saw looming as clouds on the horizon the gradual development of proprietary "patent" medicines which were in every sense of the word nostrums. He saw failure of states to set up systems of licensure as rapidly as they were needed.

The meeting in Newport was marked by many interesting features. Dr. William Pepper of the University of Pennsylvania gave the address on medicine and devoted it to the life of Benjamin Rush, but the treasurer of the Rush monument committee could only report a total of $1,000, and it was decided to abandon the $1 limit on subscriptions.

The Board of Trustees of the American Medical Association made its report on THE JOURNAL, recognizing that it had now become well established and a credit to the Association. At the beginning of the year the number of pages of THE JOURNAL had been increased from thirty-two to thirty-six weekly.

The American Social Science Association sent in a resolution, which was adopted, urging a more thorough general education antecedent to the study of medicine.

After the reading of the report of the Board of Trustees, the minutes show that Hon. George Bancroft, famous as a historian, entered on the stage and was presented to the members who arose to receive him.

At that time the resolution was adopted that the American Medical Association should send its representatives to the meeting of the U. S. Pharmacopeial Convention.

BROWN-SÉQUARD AND REJUVENATION

Among the extraordinary manifestations of our civilization is the manner in which a noted scientist who has gained great fame may suddenly hazard all his repute by some sudden aberration as he grows older. This occurred to the great Brown-Séquard, who suddenly claimed that he had discovered the secret of perennial youth and of rejuvenation. THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION had recorded his utterances as too absurd to warrant serious consideration, but his ideas began to gain great public interest. THE JOURNAL then announced the report of a citizen who had met sudden death by attempting to rejuvenate himself by the Brown-Séquard technic.

ORGANIZATION

Still experimenting with methods of organization, there was now an attempt to gain strength and support for the American Medical Association by promoting reorganization with branches and societies similar to those of the British Medical Association. It was hoped that the districts and tristate and similar groups could be incorporated into the American Medical Association in some manner so as to assure a great membership with a vast subscription to THE JOURNAL. At the same time the California State Medical Association passed a resolution demanding that the one qualification necessary for membership should be continuous membership in a local medical society. This was the principle which was ultimately to prevail.

(To be continued)

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Clinical Notes, Suggestions and New Instruments

TRAUMATIC CHYLOTHORAX RESULTING FROM BATTLE INJURY

LIEUTENANT COLONEL WILLIAM H. BERRY
Medical Corps, Army of the United States

Chylothorax is not a common condition. According to Brescia [1] it was first described by Bartolet in 1633. Jahsman [2] in a review of the literature extending up to 1942 was able to find only 102 cases. He reported 3 additional cases, bringing the total number to 105.

The following are the classifications of chylothorax: (1) traumatic; (2) obstructive or nontraumatic: (*a*) intraductile obstruction due to new growth, filaria or Hodgkin's disease, and (*b*) extraductile obstruction due to mediastinal tumors, tuberculous glands or aortic aneurysm; (3) associated diseases such as thrombosis of the subclavian vein, and (4) spontaneous.

The presence of a chylothorax is obvious when the pleura is perforated, as in the traumatic cases, but is difficult to explain when it is intact, as in the obstructive cases. The flow through the thoracic duct is only 4 mm. per second, and the pressure at its exit into the vein is less than the venous pressure. Curtis [3] quoted Sahli as advancing the theory that it passes through the lymphangiectasis by diapedesis. The passage of lymph might also be explained as being due first to diffusion or transudation, and second to rupture of dilated lymphatic vessels. This latter would appear to be a better explanation.

The spontaneous group of chylothorax occurs in children under 1 year of age and may be due to some congenital anomaly or atresia in the lymphatic system.

The case herein reported belongs to the traumatic group and is to my knowledge the only one in the military literature from the present war.

REPORT OF CASE

An infantryman aged 28 was wounded by an 88 mm. shell Nov. 17, 1944 in Germany. He was admitted to an army hospital with a pulse rate of 120 and blood pressure 70 systolic and 50 diastolic; he was in acute respiratory distress.

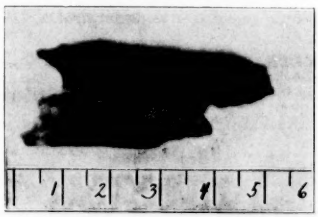
Physical examination revealed considerable emphysema over the upper part of the chest and neck. Percussion of the left side of his chest was dull, and there were diminished breath and voice sounds. The heart and mediastinum were not displaced. A roentgenologic examination of the chest revealed a fracture of the third rib anteriorly on the left side and a hemothorax. It also revealed a large shell fragment in the left side of the upper part of the chest. His left lung was aspirated and 600 cc. of blood was obtained. He was given a transfusion of 1,000 cc. of blood. His condition improved and the blood pressure stabilized at 110 systolic and 80 diastolic, but he continued to have respiratory distress and to need oxygen. Because of these symptoms and the large size of the missile, it was decided to perform a thoracotomy. This was done and the upper lobe of the left lung was found to have a laceration 2 inches (5 cm.) long, to be partially collapsed and to contain a moderately sized hematoma. A foreign body 2 by 5 by 5 cm., as shown in the accompanying illustration, had lodged in the posterior thoracic wall in the angle between the subclavian artery and the arch of the aorta. The missile was wedged tightly in the posterior wall of the chest. It had sharp, rough edges and was pressing firmly against the aorta and the subclavian artery. It appeared that the fragment might slough through these vessels if it was not removed, but there was also the danger that its removal might start a hemorrhage. Considerable traction had to be exerted to effect its removal, but hemorrhage did not occur. The laceration in the lung was sutured, the fractured rib ends were smoothed, blood clots were removed and the chest was closed.

The patient's condition remained good until forty-eight hours after the operation. By this time sufficient fluid had accumulated in the chest to cause dyspnea. A thoracentesis was performed and 800 cc. of milky, blood-stained fluid was removed. This was repeated forty-eight hours later, and 1,000 cc. of clear milky fluid was obtained. This was proved by laboratory examination to be chyle. One thousand cubic centimeters of chyle was obtained each day for the next eight days, after which the accumulation rapidly diminished. Five hundred cubic centimeters was obtained on the tenth day, and 75 cc. on the fourteenth day. During this period the patient lost 15 pounds (6.8 Kg.) and complained of considerable weakness. Recovery of weight and strength were rapid, and the patient was evacuated on his twentieth postoperative day.

The fluid obtained at the second tapping of the chest was strongly positive on examination for fat. The specific gravity was 1.020, the sugar content was 142.8 mg. and the nonprotein nitrogen 12 mg. per hundred cubic centimeters. A sample from the last tapping was examined, and the only change was a sugar of 76 mg. per hundred cubic centimeters. His blood chemistry was within normal limits. The hematocrit reading was taken five times, and the results ranged from 42 to 47.

COMMENT

It is interesting to note that the amount of chyle became decidedly less between the eighth and the tenth day. Lee [4] has shown that a fairly extensive collateral circulation becomes established between seven and eight days after the ligation of the thoracic duct, an observation which appears to be substantiated by this case.



Foreign body (2 by 5 by 5 cm.) removed from thoracic wall.

Wright [5] has expressed the opinion that lymph from the liver contains 6 per cent of protein as compared to 4 per cent in that from the intestine and 2 per cent in that from the legs, and that during starvation, there is at first a slight fall in the levels of blood sugar and proteins, but these soon become stabilized and remain so until near the end. He stated that the liver is reduced to 54 per cent of its bulk, the muscles to 31 per cent and the spleen to 60 per cent. When one considers the large bulk of muscle tissue and the relatively large volume of liver that can be called on, it is easy to understand how this patient's blood chemistry remained normal for a period of ten days.

The amount of chyle and lymph flowing through the thoracic duct is estimated to be between 50 and 120 cc. per hour. The patient lost about 1,000 cc. per day, which would roughly represent his total quantity from this source. He consequently must have been sustained from stored bodily reserves, and the liver and muscles seem to be the most likely sources.

The treatment of chylothorax is mainly supportive. Plasma should be given daily in amounts equivalent to the loss of chyle, and the fluid balance should be maintained. Intravenous infusions of the chyle from the chest of this patient were being considered when the drainage stopped. Surgical intervention

1. Brescia, M. A.: Chylothorax: Report of Case in Infant, Arch. Pediat. **58**: 345-356 (June) 1941.
2. Jahsman, W. E.: Chylothorax: Brief Review of Literature, Ann. Int. Med. **21**: 669-678 (Oct.) 1944.
3. Curtis, G. M.: Lymphatic System, in Christopher, F.: Surgery, ed. 3, Philadelphia, W. B. Saunders Company, 1942, chap. 10.
4. Lee, F. C.: The Establishment of Collateral Circulation Following Ligation of the Thoracic Duct, Bull. Johns Hopkins Hosp. **33**: 21-31 (Jan.) 1922.
5. Wright, S.: Applied Physiology, ed. 7, London, Oxford University Press, 1940, pp. 470 and 689.

has been advocated in the traumatic instances which do not close spontaneously. Dissection of the thoracic duct, however, is a difficult surgical operation and one that should be chosen only as a last resort.

SUMMARY

1. One case of war injury to the thoracic duct in the angle of the aorta and subclavian artery is reported.

2. The foreign body was removed from this location, and the patient recovered after the subsidence of traumatic chylothorax.

3. Some of the physiologic observations in connection with chylothorax are the establishment of a collateral circulation between the eighth and ninth days and the maintenance of normal blood chemistry.

4. The causes of the four types of chylothorax are trauma, obstruction of the ducts, thrombosis of subclavian vein and spontaneous rupture. Treatment consists in giving plasma and maintaining the fluid balance of the body.

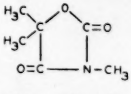
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

TRIMETHADIONE. — Tridione. — 3,5,5-Trimethyloxazolidine-2-4-dione.—$C_6H_9NO_3$.—M. W. 143.14. The structural formula of trimethadione may be represented as follows:



Actions and Uses.—Trimethadione is primarily an anticonvulsant and has only minor analgesic properties. It is used in the treatment of epilepsy, in which it is principally effective in cases with seizures of the true petit mal type. Its results in this condition appear to be somewhat better in children than in adults. It is ineffective in grand mal. It is also useful in psychomotor epileptic seizures, especially with diphenyl hydantoin sodium when the latter alone is ineffective. It may be tried in myoclonic and akinetic seizures of organic origin but is generally less effective than in the idiopathic forms of the disease. It has been used with diphenyl hydantoin sodium and/or phenobarbital in cases in which attacks are complicated by grand mal seizures, but such use appears less rational and may in some instances serve to exaggerate the grand mal as the petit mal is decreased. It has been administered in solution by intramuscular injection to terminate attacks of status epilepticus, but such use is not of sufficiently established value to warrant recognition at the present time.

Toxic reactions to trimethadione appear to be relatively infrequent. Gastric irritation, nausea, skin eruptions, photosensitivity and blurring of vision with a diminution in visual acuity that is reversible may be encountered and are considered indications for temporary withdrawal or reduction in dosage of the drug. Photophobia appears to be less frequent in children than in adults. The skin manifestations that have been observed are not attributable to sensitization, and the visual disturbances have not been shown to be associated with optic nerve damage.

Rare cases in which aplastic anemia with a depression of all elements of the peripheral blood has occurred with the use of trimethadione indicate the need for repeated complete blood examinations in patients receiving this drug. It has been suggested that small initial doses be used and the patient cautioned to report at once any untoward symptoms that may ensue. Careful medical supervision of patients under treatment with trimethadione is essential. It should not be used in the presence of anemia, leukopenia or thrombocytopenia and employed with caution if at all in any type of blood dyscrasia.

It is contraindicated in patients with advanced renal or hepatic disease or with disease of the optic nerve.

Dosage.—In petit mal epilepsy, the dosage required may vary from 1 to 2 Gm. daily, given in divided doses of three to seven 0.3 Gm. capsules per day. In children under 6 years of age it is advisable to begin with 0.15 to 0.3 Gm. three times daily and to increase this if necessary. Optimum dosage must be determined for each patient.

Tests and Standards.—

Trimethadione occurs as a white, granular, crystalline substance possessing a slight camphor-like odor. It melts at 45-46.5 C. It is soluble in water and freely soluble in alcohol, in benzene, in chloroform and in ether. The *p*H of a 5 per cent solution is about 6.0.

Add 1 cc. of one-normal barium hydroxide solution to 5 cc. of a 2 per cent aqueous solution of trimethadione: within a few seconds a considerable precipitate appears.

Add 3 cc. of 25 per cent sodium hydroxide to 0.5 Gm. of trimethadione. Heat for thirty minutes on a boiling water bath. Carefully evaporate the solution to 0.5 cc. over a free flame, during the course of which a heavy precipitate forms. Cool and carefully treat the residue with hydrochloric acid until the resulting solution is acid to litmus. Add 1 drop of ferric chloride solution to 10 drops of the aforementioned solution: a deep yellow color develops.

Extract the acid solution obtained as described in the preceding paragraph with three 10 cc. portions of ether. Decant the ether extracts from the residue and combine all three ether fractions. Evaporate the ether solution to dryness on the steam bath and then recrystallize from benzene: the melting point of the crystals is 79-81 C.

Accurately weigh about 10 mg. of the derivative obtained in the previous paragraph. Transfer to a 150 cc. beaker, add 3 drops of ethanol to effect solution and follow with about 25 cc. of water. Add two drops of phenolphthalein and titrate with one-hundredth normal sodium hydroxide: the neutralization equivalent is within the limits 101-107.

Dry 0.5 Gm. of trimethadione, accurately weighed, over phosphorus pentoxide for six hours: the loss does not exceed 0.1 per cent.

Ash about 1.0 Gm. of trimethadione, accurately weighed: the amount of residue is not more than 0.05 per cent.

Weigh accurately about 200 mg. of trimethadione. Dissolve in about 5 cc. of alcohol and then add 25 cc. of water followed by 25 cc. of tenth-normal sodium hydroxide. Allow to stand for fifteen minutes, add 4 drops of cresolphthalein and titrate the excess alkali with tenth-normal hydrochloric acid. Each cubic centimeter of tenth-normal sodium hydroxide is equivalent to 0.014314 Gm. of trimethadione: the trimethadione content is not less than 98 per cent nor more than 102 per cent.

TRIMETHADIONE CAPSULES:

Weigh sufficient powder from ten capsules to contain about 100 mg. of trimethadione. Transfer to a small beaker, add 5 cc. of 95 per cent ethanol and allow to stand for five minutes. Decant the alcohol through filter paper previously moistened with alcohol. Repeat the extraction with alcohol and filtration twice more. Dilute the combined filtrates to four volumes with water. Add 20 cc. of tenth-normal sodium hydroxide to the solution, allow to stand for five minutes, add two drops of cresolphthalein and then neutralize the excess alkali with tenth-normal hydrochloric acid. Each cubic centimeter of tenth-normal sodium hydroxide is equivalent to 0.014314 Gm. of trimethadione: the trimethadione content is not less than 95 per cent nor more than 105 per cent of the claimed amount.

TRIMETHADIONE SOLUTION:

Pipette 2 cc. of trimethadione solution (about 40 mg. per cubic centimeter), add 50 cc. of water and then 20 cc. of tenth-normal sodium hydroxide. Allow the trimethadione to hydrolyze for five minutes, add two drops of cresolphthalein and titrate the excess alkali with tenth-normal hydrochloric acid. Each cubic centimeter of tenth-normal sodium hydroxide used is equivalent to 0.014314 Gm. of trimethadione: the trimethadione content is not less than 97.5 per cent nor more than 102.5 per cent of the claimed amount.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Tridione Capsules: 0.3 Gm.

STREPTOMYCIN.—Streptomycin is a purified active principle produced by certain strains of Streptomyces griseus when they are grown on suitable mediums. It has the property of inhibiting the growth and of occasionally destroying certain gram-negative bacteria. It may be prepared as several salts, including the hydrochloride and sulfate salts.

Actions and Uses.—Streptomycin is an antibiotic agent. It is not a pure product but is marketed as a sterile powder in airtight ampules or vials, the activity in terms of milligrams or grams of pure streptomycin base being declared on the label. Streptomycin and its salts are reasonably stable but should be stored at a temperature not in excess of 15 C. Solutions of streptomycin are less stable than the dry powder and should always be kept in the refrigerator. Only freshly prepared solutions should be used parenterally.

Streptomycin is active in vitro against a wide variety of gram-negative organisms including such pathogens as Escherichia coli, Pasteurella tularensis, Hemophilus influenzae, Pseudomonas aeruginosa, Bacillus proteus, Eberthella typhosus and Brucella abortus. With certain outstanding exceptions, the in vivo activity of streptomycin parallels its in vitro activity.

Streptomycin is not appreciably absorbed when given by the oral route, although it is not significantly destroyed in the

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gastrointestinal tract. For systemic action it must be given by the parenteral route.

Streptomycin is useful in the treatment of urinary tract infections due to streptomycin-sensitive gram-negative organisms. In the presence of obstruction, streptomycin is of only temporary benefit, and successful therapy depends on correction of the underlying anatomic condition. Pasteurella tularensis is highly susceptible to streptomycin, and this agent is the most effective treatment for tularemia at present available. Influenzal meningitis due to various Hemophilus organisms has been successfully treated with streptomycin, as has Hemophilus infections in other parts of the body. Wound infections, bacteremias and other infections due to streptomycin-susceptible organisms may be treated with this agent.

Experience with streptomycin in the treatment of undulant fever, bacillary dysentery and typhoid has been disappointing, and failure of therapy has been the rule. Until further work elucidates the place of streptomycin in these infections, its use cannot be recommended.

Although streptomycin shows promising results in the therapy of tuberculous infections in guinea pigs, the clinical experience in human infections has not been sufficiently large to delineate its precise role in the control of human tuberculosis. At best it does not appear to offer more than limited usefulness as an adjunct to other forms of therapy.

Streptomycin is capable of producing side reactions of varying severity. Certain lots have been found which produce a histamine-like reaction on parenteral administration with a fall of blood pressure and syncope. This is due to some accompanying toxic material, and its occurrence is now rare. The most serious toxic effect is its neurotoxic action on the eighth nerve, which may occur in about 10 per cent of patients treated with large doses (3 to 4 Gm. daily) over periods of several weeks to months. This is characterized by vertigo, tinnitus, disturbance of equilibrium and diminished auditory acuity. On cessation of therapy, partial recovery of eighth nerve function is the rule, although this recovery is slow, and vestibular function appears to be permanently impaired although compensation occurs. Minor toxic effects include skin rashes, mild malaise, muscular aching and drug fever.

Dosage.—For intramuscular injection, the powder should be dissolved in sterile, pyrogen-free distilled water or isotonic solution of sodium chloride to give a concentration of from 100 to 200 mg. of streptomycin base per cubic centimeter. For subcutaneous injection, more dilute solutions are recommended. If the drug is administered by intravenous drip, 1 to 2 Gm. dissolved in a liter of isotonic solution of sodium chloride may be administered at a rate of about 25 drops per minute. For intrathecal administration, 10 to 20 mg. per cubic centimeter in isotonic sodium chloride solution should be used. For topical application, solutions containing 25 to 50 mg. per cubic centimeter may be used.

The dosage of streptomycin should be governed by the susceptibility of the organism responsible for the infection. In severe fulminating infections, doses of 2 to 4 Gm. daily may be necessary, given in divided doses, parenterally, every three hours. In less severe infections, and with highly susceptible organisms, daily doses of from 1 to 2 Gm. may be sufficient. Treatment should be continued for at least forty-eight to seventy-two hours after the temperature returns to normal and all signs of infection have disappeared.

It is important to give sufficiently large doses to inhibit or kill the infecting organisms quickly, since the development of "fastness" to streptomycin is common and may occur rapidly. Inadequate dosage predisposes to the development of resistant strains of the organisms.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Streptomycin Sulfate: Vials containing streptomycin sulfate equivalent in activity to 1 Gm. of streptomycin base (one million units).

MERCK & CO., INC., RAHWAY, N. J.

Streptomycin Hydrochloride: Vials containing streptomycin hydrochloride equivalent in activity to 1 Gm. of streptomycin base (one million units).

CHAS. PFIZER & CO., INC., NEW YORK

Streptomycin Hydrochloride: Bottles containing streptomycin hydrochloride equivalent in activity to 0.375 Gm. of streptomycin base.

Streptomycin Sulfate: Bottles containing streptomycin sulfate equivalent in activity to 1 Gm. of streptomycin in base.

CONTRACEPTIVE JELLIES AND CREAMS

(See New and Nonofficial Remedies, 1946, p. 360).

The following article has been accepted:

HOLLAND-RANTOS COMPANY, INC., NEW YORK

Koromex Cream: 78 Gm. collapsible tubes. A water soluble stearic acid emulsion having a p_H of 4.2, prepared from the formula:

Stearic acid	20.0%
Cetyl alcohol	1.0
Glycerin	5.0
Boric acid	2.0
Oxyquinolin benzoate	0.02
Phenylmercuric acetate	0.02
Polyoxyalkalene sorbitan monostearate	3.0
Sorbitan monoöleate	5.0
Perfume	0.015
n-butyl-p-hydroxybenzoate	0.02
Water	q. s.

Packaged with a vaginal applicator or in refill packages containing a tube of cream only.

U. S. trademark 213,756.

Actions, Uses and Dosage.—See article Contraceptive Jellies and Creams.

Koromex Applicator: A transparent plastic syringe threaded at the blunt, intravaginal end, to screw onto the tubes of Koromex Cream, to permit filling by compression of the tube. The full capacity is 5 cc., the recommended dose.

THEOPHYLLINE (See New and Nonofficial Remedies, 1946, p. 395).

The following dosage form has been accepted:

E. S. MILLER LABORATORIES, INC., LOS ANGELES

Tablets Theophylline: 0.1 Gm.

Council on Physical Medicine
Council on Foods and Nutrition
and the
Council on Pharmacy and Chemistry

The following statement is published for the information of manufacturers of accepted preparations and others who are concerned:

HOWARD A. CARTER,
Secretary, Council on Physical Medicine.

J. R. WILSON,
Secretary, Council on Foods and Nutrition.

AUSTIN SMITH,
Secretary, Council on Pharmacy and Chemistry.

For a number of years the Councils have authorized the use of seals in connection with products which have been found eligible for inclusion as "accepted" in the publications of the respective bodies. It was recently pointed out that each of the seals emphasized the Association rather than the Council awarding the seal, a fact which it is believed gave rise to the erroneous impression that it is the Association rather than the individual Council that accepts a preparation or device. To correct this the seals were redesigned to emphasize the name of the Council concerned. Attention is called to the similarity of the seals, which intentionally indicates the corresponding similarity in methods of procedure, principles and objects of the three Councils. No change has been made in the rules governing the use of the seals. These rules appear in publications of the respective Councils. Cuts of the seals are available in three sizes. The following are reproductions of the largest size:

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SATURDAY, FEBRUARY 1, 1947

CALORIC INTAKE AND INDUSTRIAL OUTPUT

For years it has been assumed that the caloric needs of man were well understood. This assumption was based on the work of Rubner, Benedict, Lusk, Du Bois and others who with calorimeters diligently gathered the information needed for the calculation of caloric needs of both individuals and groups.

In the recent war opportunities developed for studying large groups of men over extended periods. Individual experiments in the past had often been done under circumstances that left doubts as to the rigor with which the given diet was observed. The war, however, created situations in which whole groups became completely dependent on strictly rationed supplies. Studies made under these conditions have corroborated observations previously made by slow, painstaking calorimetric studies on individuals.

Kraut and Muller[1] have related the caloric intake of workers to their industrial output. Their observations confirm some accepted beliefs about the human body. The body is often compared to a machine, and to it the law of the conservation of energy is assumed to apply in a rough sort of way. Accordingly the energy derived from ingested food is distributed between two functions, one the function of keeping the body alive at a certain basic level of weight and lesser activity, the other the function of carrying out additional work, exercise or play. The authors provide figures for miners, steel workers and others on strict rations to show that this distribution did occur in groups studied during the war, when rations in Germany were often reduced below the basic requirements. In their observations the authors divide the caloric intake into two portions according to their role, from 1,600 to 1,800 calories for basic needs and an additional portion for work. One group of 20 workmen, fed entirely by the factory management, were occupied with the erection of an embankment inside the works. Observations covered more than a year, during which it was shown that production, as measured in tons per unit of time, depended directly on available work calories. When work did not consume all the ingested calories, a mass weight gain was recorded. When production was stimulated by a premium of tobacco, a mass weight loss was recorded. This showed that, if output surpassed the range of caloric possibilities, the deficit had to be met by withdrawal of energy from body substance. As long as a worker received calories above the basic level, he unconsciously adjusted his activity to maintain his weight. If he received nothing above the basic level, adjustment was not possible other than weight loss in proportion to work. This clearly brought out the plight of civilian groups such as housewives, in whom any activity above the basic level caused prompt loss of weight. Miners and steel workers also were studied. The longest and most remarkable study had to do with the relation between nutrition and coal production of the Ruhr district from September 1939 to September 1944.

Assuming the correctness of these records, it is apparent why, on a starvation diet, the capacity to work is lowered and work finally stops entirely. The reason for the fall in coal production in the Ruhr during the war is quite clear. A small number of well fed men can produce more than a large number of men on subminimal diets, and attempts to maintain crews of starving men are sheer waste. An obvious contemporary application of these facts is to the feeding of prisoners of war. According to statements widely publicized in American newspapers, thousands of men, denied repatriation at this late date, are still being required to do heavy physical work on inadequate diets. This policy is stupid.

1. Kraut, H. A., and Muller, E. A.: Calory Intake and Industrial Output, Science **104**: 495 (Nov. 29) 1946.

ADVANCES IN THE STUDY OF HEMOLYTIC STREPTOCOCCI

In a review of modern methods of studying hemolytic streptococci Swift[1] points out that military medical practice offers opportunities for the study and control of acute streptococcic diseases now not usually or easily available in civil practice. During the war frequent outbreaks among recruits of infections, especially respiratory, due to hemolytic streptococci led to well organized studies of these important organisms. The term hemolytic streptococci indicates that certain cocci which grow in chains can cause lysis or laking of red blood corpuscles. On the basis of other biologic properties, notably serologic or antigenic reactions and pathogenicity in different species of animals, these streptococci are divided into several distinct groups. The serologic grouping (Lancefield) depends on the elaboration by each group of a specific antigenic carbohydrate, the C substance. Group A contains the chief

1. Swift, H. F.: Modern Technics for Studying Hemolytic Streptococci, Bull. U. S. Army M. Dept. **6**: 428 (Oct.) 1946.

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hemolytic streptococci pathogenic for man. This group is divided into types by means of agglutination and the precipitin reaction, each dependent on the presence in the cocci of specific protein components. The serums of animals immunized with virulent strains are used for the typing of group A. So far some forty types of this group have been recognized. It is said [1] that over 90 per cent of the strains recovered from army and navy trainees were composed of ten to twelve types.

Alice Evans [2] and others found that certain types of group A tend to be associated with particular streptococcic infections, but the distribution of types varies. At a given time and place a definite type may predominate, but shifting occurs from season to season and from place to place. Here many factors are involved which as yet are not understood.

Patients who recover from infection with a given type of group A will be immune for some time as a rule to reinfection by that type but perhaps subject to infection by other types. In other words, each type of streptococcus A infection is a distinct disease; consequently isolation in streptococcic infections should be practiced accordingly. Observations in the armed forces have established that cross infections readily occur when patients with different types of streptococcic infections are in the same ward. In any series of streptococcic infections prompt typing is needed in order to determine whether the infections are by different types of streptococci or an outbreak due to a virulent strain of a single type requiring immediate control. Typing will be of value also in the handling of the streptococcus carrier. Is he potentially dangerous or relatively harmless? The type of streptococci he carries in his nasal and throat secretions must be determined. If they belong to other groups than A or grow in so-called glossy colonies they may be of little importance in spreading infection. Swift says that "it is now obvious that a person should not be condemned as a disease disseminator merely because hemolytic streptococci can be recovered from his nose and throat." Typing is of essential importance also in the determination of the resistance of strains of certain types of hemolytic streptococci to sulfonamide compounds, penicillin and perhaps other antibiotics.

The interpost spread by troop transfers of similar respiratory epidemics due to a specific sulfonamide resistant strain of type 17 has been well studied.[3] Facilities should be available for streptococcus grouping and typing as well as for the determination of antibiotic resistance. Before the mass administration of sulfadiazine, for instance, it should be determined that the streptococcus strain involved in the outbreak is not sulfonamide resistant. The wide incidence of resistant strains makes this precaution essential. The results of newer methods of studying hemolytic streptococcus infections in military medical practice indicate that the general application of these methods will advance the understanding and control of the streptococcic diseases in civil practice also.

2. Evans, Alice C.: The Distribution of the Various Agglutinative Types of Hemolytic Streptococci of Group A, J. Infect. Dis. **78:** 1 (Jan.-Feb.) 1946.

3. Delamater, E. D.; Jennings, R., and Wallace, A. W.: Preliminary Report of an Outbreak of Streptococcal Disease Caused by a Sulfadiazine Resistant Group A, Type 17, Hemolytic Streptococcus, J. Infect. Dis. **78:** 118 (March-April) 1946. Mitchell, R. B., and others: The Interpost Dissemination of Epidemic Strains of Hemolytic Streptococci by Troop Movements, ibid., p. 128. Roberg, N. B.: An Epidemic Caused by a Sulfadiazine Resistant Strain of the Streptococcus Hemolyticus (Group A, Type 17), ibid., p. 135. Wilson, O. G.: An Outbreak of Sulfadiazine Resistant Streptococcus Infection at Lowry Field, Colorado, ibid., p. 147.

EPIDEMIOLOGIC PNEUMOCOCCIC PNEUMONIA

The scant information on the epidemiology of pneumococcic pneumonia as compared with the wealth of information as to its causative organism, the clinical course and the therapy can be accounted for, according to Hodges and MacLeod,[1] by the great difficulty of sufficiently controlling a civilian population so that exact relationships can be worked out between the many epidemiologic factors which contribute to the incidence of this disease. These authors investigated an epidemic of pneumococcic pneumonia at a technical training school of the Army Air Force between December 1942 and April 1945. The incidence of pneumonia at this school was higher than for other schools in the Technical Training Command of the Army Air Force and greatly in excess of the rates experienced by the Air Force as a whole.

Pneumococcus type II was the predominant organism over the entire period, causing approximately 35 per cent of all cases of pneumonia. Types I, V, VII, XII and IV were responsible for large numbers of infections and should be considered also as epidemic types. The uniformity of the population with respect to age and length of service in the Army, as well as the circumstances under which the men lived and worked, afforded an excellent opportunity for epidemiologic investigation of respiratory infections. The study of the population characteristics influencing the incidence of pneumococcic pneumonia revealed that the length of military service and duration of stay in the technical school played their part. Spread of respiratory infections by means of classrooms appears to be of greater importance than spread in barracks. This conclusion is supported by the observation that respiratory diseases affected the entire population in uniform fashion without any evidence of foci in individual barracks or squadrons. The maintenance of high rates for pneumococcic pneumonia was favored by close contact in

1. Hodges, R. G., and MacLeod, C. M.: Epidemic Pneumococcal Pneumonia: I. Description of the Epidemic, Am. J. Hyg. **44:** 183 (Sept.) 1946; II. The Influence of Population Characteristics and Environment, ibid., p. 193; III. Pneumococcal Carrier Studies, ibid., p. 207; IV. The Relationship of Nonbacterial Respiratory Disease to Pneumococcal Pneumonia, ibid., p. 231. This investigation was a joint project of the Commission on Pneumonia, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the United States Army, Office of the Surgeon General, United States Army, and the Army Air Force Rheumatic Fever Control Program, Office of the Air Surgeon.

classrooms during hours on duty as well as in the barracks. The incidence of pneumococci in classroom and barrack dust was approximately the same. The types of pneumococci predominant in the dust were the same as those present in the pharynx of normal men. Previous geographic environment, age, chilling or fatigue did not appear to be an important factor in the production of pneumococcic pneumonia in the population as a whole.

Pneumococcus carrier studies revealed that the carrier rate for all types combined varied with the seasons, being considerably higher during the winter months than during the spring or summer. The carrier rate did not bear a close relationship to the incidence of either nonbacterial respiratory disease or pneumococcic pneumonia. The carrier rates for certain of the infective types of pneumococcus, especially types IV and XII, showed a good correlation with the incidence of pneumonia caused by these types. A high carrier rate for infective types, however, did not by itself account for the incidence of pneumonia caused by these types. New arrivals at the post carried relatively few of the infective types of pneumococcus but rapidly acquired them during the first six weeks of their stay. The peak incidence of pneumonia occurred during the same period. The authors believe that a high carrier incidence for pneumococcus types I, II, V, VII, XII and IV was built up during the first winter season after the opening of the technical school and that these types were passed on to succeeding generations of students for the next three years. It seems probable that a decrease in the carrier incidence of the first four types occurred during the 1944 to 1945 season as a consequence of specific immunization against these types. Evidence was obtained which indicates strongly that pneumococci did not cause common upper respiratory disease, at least on any considerable scale.

Over a three year period of study 1 patient with pneumococcic pneumonia was admitted to the hospital for every 10 patients with nonbacterial respiratory disease. A higher ratio occurred shortly after the technical school was opened, presumably because the population had not yet become saturated with the infective types of pneumococci. During a period when pneumococcus type II was causing a large proportion of cases of pneumococcic pneumonia the ratio was lower. Evidence was not obtained that either influenza A or influenza B caused greater predisposition to pneumococcic pneumonia than other nonbacterial respiratory infections. The highest incidence of pneumococcic pneumonia, occurring when influenza A or B was epidemic could be explained on the basis of the large number of cases of nonbacterial respiratory disease caused by these viruses. The ratio of pneumonia to nonbacterial respiratory disease remained approximately 1 to 10. A consistent relationship could not be found between the incidence of pneumococcic pneumonia and streptococcic respiratory disease. Furthermore, the rates for streptococcic disease showed no obvious relation to nonbacterial respiratory disease.

From the data presented in these papers it is apparent that a simple explanation of the extremely high pneumonia rates encountered at the technical school is not possible. The high incidence appears to have been the result of a number of factors. In December 1942 and January 1943 the population of the technical school became heavily seeded with pneumococci. Prior to that time there had been relatively little pneumococcic pneumonia despite high rates for nonbacterial respiratory disease. From the beginning of 1943 until April 1945 pneumococcic pneumonia was prevalent in the technical school. The infective types of pneumococci were apparently passed along from one generation of students to another. Evidence for this is to be found in the similarity of the three winter seasons in the distribution of types of pneumococci causing pneumonia, allowing for the modification in distribution which resulted from immunization with the capsular polysaccharides during the 1944 to 1945 season. The authors assume that the presence in the population of large numbers of virulent pneumococci was one of the principal factors in the production of high pneumonia rates. The environmental conditions existing in the technical school, the constant flow of new susceptibles through the school and the thorough mingling of the school population all favored the spread of respiratory diseases. The same factors almost certainly contributed to the dissemination of pneumococci.

Current Comment

MEDICINE SERVES AMERICA

Electrical transcriptions prepared by the Bureau of Health Education have now been in use by county medical societies, state societies, health departments and other agencies for practically three years with conspicuous success. The first full year of such local broadcasting from "platters" brought about just under 3,000 local broadcasts; the second year witnessed an increase to approximately 4,500 such broadcasts. A new series of transcriptions entitled "Medicine Serves America" is announced on page 326 of this issue of THE JOURNAL. One of the disadvantages of electrical transcriptions is their fixed character. They are not subject to revision. The rapid pace of medical progress might outdate a set of transcriptions during the time between the beginning of preparation and the delivery of the finished product. In the series "Medicine Serves America" the Bureau of Health Education believes that it has overcome this disadvantage. This series, unlike the other series, is not devoted to a single topic but is a miscellaneous collection of subjects. The list of its titles will vary from time to time. Material of current interest will be included while it is fresh and will be dropped as quickly as it becomes outdated.

THE ALLERGIC PULMONARY REACTIONS OF LOEFFLER'S SYNDROME

Loeffler's syndrome[1] is characterized by changing, even transitory, pulmonary infiltrations, eosinophilia of the blood and sputum, and a relatively mild clinical course, usually afebrile, in contrast to the roentgenographic appearances in the lungs. Frequent x-ray examinations are necessary to understand the changes in the lungs. Many clinical reports of such cases have been published. In most of these reports the syndrome is explained as an allergic response in the lungs to various allergenic substances, including the tubercle bacillus, pollens, Endameba histolytica, the larvae of Ascaris lumbricoides, trichinae, and nematodes of cutaneous helminthiasis.[2] Fleeting pulmonary consolidations have been described in association with sulfonamide treatment,[3] brucellosis, asthma, amebiasis and trichiniasis. The structural alterations in the lungs at various stages of the syndrome have not been described adequately. The changes in the few cases examined after death appear to support the allergic explanation, and they may be summarized as bronchitis and pneumonia, lobular and interstitial, with pronounced eosinophilia in the exudation and infiltration coupled with appreciable increase of eosinophils in the blood. In a case of Loeffler's syndrome in a woman aged 59 with "symptomatic nonspasmodic 'asthma' of seven years' duration" there were large numbers of eosinophils in the pneumonic exudate, granulomatous and fibrous changes with necrotic arteritis and phlebitis of the allergic type.[4] Much remains to be learned about the pulmonary reactions of Loeffler's syndrome. Perhaps granulomatous processes in other organs, e. g. eosinophilic granuloma of bone, may also be allergic.

1. Löffler, W.: Zur Differential-Diagnose der Lungeninfiltrierungen; über flüchtige Succedan-Infiltrate (mit Eosinophilie), Beitr. z. Klin Tuberk. **79:** 368, 1932; Die flüchtigen Lungeninfiltrate mit Eosinophilie, Schweiz. med. Wchnschr. **66:** 1069 (Nov. 7) 1936.
2. Wright, D. O., and Gold, E. M.: Loeffler's Syndrome Associated with Creeping Eruption (Cutaneous Helminthiasis), J. A. M. A. **128:** 1082 (Aug. 11) 1945.
3. Ellis, R. V., and McKinlay, C. A.: Allergic Pneumonia, J. Lab. & Clin. Med. **26:** 1427 (June) 1941.
4. Bagenstoss, A. H.; Bayley, E. C., and Lindberg, D. O. N.: Löffler's Syndrome: Report of a Case with Pathologic Examination of the Lung, Proc. Staff Meet., Mayo Clin. **21:** 457 (Nov. 27) 1946.

SUDDEN DEATH IN YOUNG MEN

The Army Institute of Pathology received reports between 1942 and 1946 of approximately 1,000 sudden nonaccidental, noncombat deaths of apparently healthy soldiers aged 18 to 40. Pathologic examination of between 700 and 800 of these, reviewed by Moritz and Zamcheck,[1] reveals that approximately 350 of the deaths were caused by previously unrecognized heart disease, almost 300 of which were due to coronary arteriosclerosis. The postmortem examinations disclosed severe atherosclerosis of one or both coronary arteries, and thrombotic occlusion was recognized in approximately 25 per cent. Of the 91 cases involving sudden death from nontraumatic intracranial hemorrhage the bleeding was principally subarachnoid and appeared to have resulted from ruptured aneurysm of congenital or berry type in 69. Also included as a cause of sudden death was meningococcemia, in some cases of which death occurred within twenty-four hours after onset of incapacitating symptoms. This group included 110 cases of the 350 fatal meningococcic infections reported. The records of 95 of these were sufficiently complete to analyze. Purpura or cutaneous petechiae were recognized in over 80 per cent. Focal or massive adrenal hemorrhages were encountered in 71 per cent. The authors believe that adrenal hemorrhage in fulminating meningococcemia is usually preceded by degenerative changes in the cells of the glomerular and fascicular zones of the cortex. Some 200 to 400 sudden deaths were classified as due to miscellaneous causes. The largest single cause was infection of the respiratory tract. Other causes included aortic rupture, encephalitis, nonmeningococcic meningitis and pulmonary tuberculosis. At least 140 sudden deaths were investigated in which the postmortem observations disclosed nothing abnormal.

1. Moritz, Alan R., and Zamcheck, Norman: Sudden and Unexpected Deaths of Young Soldiers: Diseases Responsible for Such Deaths During World War II, Arch. Path. **42:** 459 (Nov.) 1946.

"DR. GRAHAM AND FAMILY" GOES ON THE AIR

Through the cooperation of the Mutual Broadcasting System the American Medical Association will start on February 3 a program under this title, announced in detail on page 326 of this issue of THE JOURNAL. The program will be devoted to a portrayal of the family doctor as he lives and practices in a fictitious but typical average middle size American city set in the midst of an imaginary rural area. Such city-county combinations are the backbone of the nation. In such areas practice a vast majority of American physicians serving their patients in sickness and in health and contributing to the life of the community as only professionally trained citizens can. The form and type of the program will be entertainment somewhat after the manner of the radio feature "One Man's Family." The doctor will be portrayed primarily as a man in the setting furnished by his family, his practice and his community. This is an interpretative rather than an educational program. Nevertheless the glimpses of medicine that will show through will be modern and informative. The broadcasts will originate from New York. There will be no speaker. The dramatization will be permitted to create its own impression. The establishment of this new program in no way affects the broadcasts under the title "Doctors—Then and Now" by the National Broadcasting Company. Neither does it preclude the possibility of additional radio arrangements. The electrical transcription services will be continued. All are under the supervision of the Bureau of Health Education.

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ORGANIZATION SECTION

Official Notes

NATIONAL CONFERENCE ON RURAL HEALTH

The second annual meeting of the National Conference on Rural Health will take place at the Palmer House, Chicago, Friday and Saturday February 7 and 8. In line with the purpose of the conference, to discuss ways and means of improving rural medical service, the following program has been prepared:

PALMER HOUSE, FRIDAY MORNING

9:00 A. M. *Registration*
Red Lacquer Room

9:45—9:55 A. M. *Purpose of Conference*
F. S. CROCKETT, M.D., Chairman, Committee on Rural Medical Service American Medical Association

9:55—10:00 A. M. *Address of Welcome*
GEORGE F. LULL, M.D., Secretary and General Manager, American Medical Association

10:00—10:15 A. M. *The Farmer and the Medical Service Program*
ALBERT S. GOSS, Master, the National Grange, Washington, D. C.

10:15—10:55 A. M. *Methods of Bringing and Holding Doctors in Rural Areas*
CHESTER STARR, Director of Rural Health, Missouri Farm Bureau Federation, Jefferson City

10:55—11:35 A. M. *Hospital Facilities and Health Centers for Rural Areas*
MRS. ROY C. WEAGLY, President, the Associated Women of the American Farm Bureau Federation, Hagerstown, Md.
GRAHAM L. DAVIS, Director, Division of Hospitals, W. K. Kellogg Foundation, Battle Creek, Mich.; Member Federal Hospital Council
JOSEPH W. FICHTER, Master, Ohio State Grange, Columbus
ROBIN C. BUERKI, M.D., Dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia; Member Federal Hospital Council

11:35—11:45 A. M. *Intermission*

11:45—12:30 A. M. *Voluntary Medical Prepayment Plans as They Apply to Rural Communities*
EDWARD MERTZ, Director of Education, Farmers Educational and Cooperative Union of America, Denver
JAMES R. McVAY, M.D., Vice Chairman, Council on Medical Service, American Medical Association, Kansas City, Mo.
J. S. JONES, Secretary, Minnesota Farm Bureau Federation, St. Paul

F. S. CROCKETT, M.D., Chairman.

A. M. A. HEADQUARTERS, FRIDAY AFTERNOON

ROUND TABLE DISCUSSIONS *

2:00—5:00 P. M.

1. *Hospital Facilities and Health Centers*
ALLEN T. STEWART, M.D., Chairman
MRS. ROY C. WEAGLY, Co-chairman

2. *Methods of Bringing and Holding Physicians and Dentists in Rural Areas*
J. S. JONES, Chairman
H. B. MULHOLLAND, M.D., Co-chairman

3. *Voluntary Medical Prepayment Plans*
JAMES F. DOUGHTY, M.D., Chairman
MRS. PAUL PALMER, Co-chairman

4. *Nursing Needs of Rural Communities*
MRS. CHAS. W. SEWELL, Chairman
CHAS. W. HOLMAN, Co-chairman

5. *Health Council as Agency for Promoting Rural Health*
J. PAUL JONES, M.D., Chairman
LLOYD C. HALVORSON, Co-chairman

6. *Medical Care for Lower Income Groups*
OWEN COOPER, Chairman
EDWARD MERTZ, Co-chairman

PALMER HOUSE, RED LACQUER ROOM,

SATURDAY MORNING

9:30 A. M. *Reports of Round Table Committees and Discussion*

1:00 P. M. *Luncheon*

Speakers:
HON. J. MELVILLE BROUGHTON, Raleigh, N. C.
HARRISON SHOULDERS, M.D., President, American Medical Association
OLIN WEST, M.D., President-elect, American Medical Association

L. W. LARSON, M.D., Co-chairman.

* Recommendations of round table committees regarding dentistry and nursing will not be acted on by the Conference but will be referred to the National Organizations concerned.

ADDITIONAL ELECTRICAL TRANSCRIPTIONS

The Bureau of Health Education of the American Medical Association announces a new series of electrical transcriptions under the title "Medicine Serves America," available about February 15. This makes the fifteenth series of transcriptions and provides a transcription library which is now large enough to keep a local medical society broadcasting once a week for almost four years. In this series are included interviews, dramatizations, musical programs and a wide variety of subjects. The new series consists of these programs:

1. Training Good Doctors, Dr. Victor Johnson.
2. Hardening of the Arteries, Dr. W. C. Hueper.
3. Cancer in Industry, Dr. A. J. Lanza.
4. Modern Treatment of Skin Diseases, Dr. W. W. Bolton.
5. Farm Accidents, Dr. H. H. Young.
6. Modern Progress in Drugs, Dr. E. M. K. Geiling.
7. Infectious Heart Disease, Dr. Walter S. Priest.
8. Woman's Auxiliary to the American Medical Association, Mrs. J. D. Hamer and Mrs. E. A. Allen.
9. Protecting the Public, Dr. Austin E. Smith.
10. Health and Physical Fitness, Dr. Dean F. Smiley and Fred V. Hein, Ph.D.
11. Teamwork in Cancer in Industry, Dr. T. J. Curphey.
12. Working Toward Sound Minds, Dr. Roy R. Grinker.
13. New Hope for the Deafened, Dr. Norton Canfield.
14. The Soul of Medicine, Dr. Harrison Shoulders.

Full information is contained in a radio handbook published by the Bureau of Health Education and available in single copies free to medical societies, health departments and voluntary health agencies when requested on official letterheads. This manual is not primarily designed to be sold, but, if quantities are desired, a nominal price will have to be put on it. Such prices are available on request from the Bureau of Health Education, 535 North Dearborn Street, Chicago 10.

MEDICAL BROADCAST ON MUTUAL NETWORK

Beginning Monday February 3 the American Medical Association and the Mutual Broadcasting System will present a thirty minute dramatic presentation entitled "Dr. Graham and Family" each Monday at 10:30 p. m. Eastern standard time (9:30 Central, 8:30 Mountain, 7:30 Pacific standard time). The show will run for twenty-six weeks.

This will be a running story of the life of a general practitioner in a medium size typical American community. It will portray the doctor's practice and the life in his home and his community relationships. It will have only such medical aspects as will come in naturally because the leading character is a doctor. The purpose of the broadcasts is not so much educational as interpretative.

Plans for the program have been made by Drs. W. W. Bauer and W. W. Bolton of the Bureau of Health Education with Mr. Phillips Carlin and "Bud" Fischell of the Mutual network. The scripts will be written by Allen Sloan and the production directed by Cyril Ambruster.

TELEVISION PROGRAMS

The following television programs have been arranged by the Bureau of Health Education for presentation over Station WBKB, Chicago, on the dates indicated:

February 13. Psychosomatic medicine. Special Navy film.

February 27. Plastic eyes and contact lenses. Miriam D. Eubank, M.D., Evanston, Ill.

March 13. Oral surgery. Lon W. Morrey, D.D.S., American Dental Association, Chicago, and a representative from the Chicago Society of Oral Surgeons.

March 27. Centennial of American Medicine — Physical Medicine. C. O. Molander, M.D., Chicago, and Howard A. Carter, Ph.D., Secretary, Council on Physical Medicine.

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VICTOR JOHNSON ACCEPTS APPOINTMENT WITH MAYO FOUNDATION

The Board of Regents of the University of Minnesota, the Board of Governors of the Mayo Clinic and the Graduate Committee of the Mayo Foundation have announced the appointment of Dr. Victor Johnson of Chicago to the post of director of the Mayo Foundation for Medical Education and Research to succeed Dr. Donald Balfour when he becomes Director Emeritus in 1947. Dr. Johnson will also be professor of physiology.

Dr. Johnson will join the staff of the Mayo Foundation in April and will become director in October, with Dr. Balfour continuing in an advisory capacity.

Washington Letter

(From a Special Correspondent)

Jan. 29, 1947.

President Truman Thanks Scientists for Wartime Research

President Truman expressed his thanks at White House ceremonies to the scientists who conducted wartime research in the Office of Scientific Research and Development, which is now being disbanded by Dr. Vannevar Bush, director. In the group were Drs. Bush; A. R. Dochez of Columbia University; Alfred N. Richards, chairman, Committee of Medical Research and Development; A. Baird Hastings, of the department of biochemistry of Harvard Medical School; Lewis H. Weed, National Academy of Science; Karl T. Compton, president, Massachusetts Institute of Technology; James B. Conant, president, Harvard University; J. C. Hunsaker, M. I. T.; Roger Adams, University of Illinois; Richard Tolman, California Institute of Technology, and Frank B. Jewett, National Defense Research Committee.

Nuclear Research for Medical and Public Health Work

Leon F. Curtiss, chief, radioactivity section, U. S. Bureau of Standards, outlined joint plans of the bureau and of the U. S. Public Health Service to erect a 20 million dollar national radiation institution at Bethesda, Md. It would be devoted to peacetime research in nuclear energy for public health work and the development of scientific methods for everyday use of radioactive substances. The project has been recommended to the President's Atomic Energy Commission, which has the job of coordinating atomic energy research and has taken offices in the new War Department building in downtown Washington. The program, which would require approval of Congress, would include large laboratories and a uranium pile valued at three million dollars. The project would not study development of atomic energy for war services but would concentrate on research in radioactivity, radiobiology and nuclear energy in general for protection of health.

Health Welfare Programs in Labor-Management Agreements

Labor Secretary Schwellenbach in his annual report to Congress advocated increased use of health-welfare programs in labor-management agreements as "an effective and flexible means of providing greater social security through collective bargaining." He believes that health-welfare programs will assure greater industrial harmony and worker security. John L. Lewis, president of the United Mine Workers, obtained such a fund but wants to increase the industry's contribution to the mine welfare fund from 5 to 10 cents a ton. The C. I. O. "Big Three," steel, automobile and electrical workers unions, are asking for employer financed welfare programs in 1947 wage contracts.

Courses in Mental Hygiene Proposed for Military Academy

Dr. William C. Menninger, formerly chief of the Army Neuropsychiatry Consultants Division and now chairman of consultants to the Secretary of War, revealed here that the Surgeon General of the Army has proposed that mental hygiene be added to the curriculum of the U. S. Military Academy. In Washington with other of the nation's leading psychiatrists to determine how to improve the Army's program, Dr. Menninger said the courses would be adopted to train better leaders. He expressed the opinion that if soldiers had better leaders and more pride in their army jobs there would be fewer breakdowns.

Red Cross Spends Seven Hundred and Thirty Million Dollars in Seven Years

National Chairman Basil O'Connor of the American Red Cross reports that 730 million dollars has been spent by the organization in the last seven years. He described the period as the "most significant" in the history of the Red Cross and listed among the numerous services performed at home and abroad the furnishing of drug, medical and educational supplies and the reorganization of community health and welfare services in war-affected cities. He also reported that 6,663,121 Americans gave 13,326,000 pints of blood in the donor program for the Army and Navy.

Model Center for Rehabilitation of Handicapped Civilians

Dr. Howard Rusk, former chief of Army Air Forces rehabilitation, told a Washington group which included Mrs. Harry S. Truman and wives of cabinet members that there is need for a model center where civilians with physical handicaps could be given the same kind of rehabilitation accorded wounded servicemen and veterans. A drive for $300,000 has been launched. Dr. Rusk pointed out that while the government is gratefully assisting disabled veterans to retrain themselves for useful lives, 23 million civilians also need rehabilitation. He said that twenty-five communities are setting up rehabilitation centers but require a model center.

Promote Nationwide Recruitment of Student Nurses

The Council of Professional Practice of the American Hospital Association has proposed that a nationwide committee be established to promote student nurse recruitment. Dr. Robin C. Buerki, chairman, said that the existing shortage of graduate nurses and low enrolment of students are affecting hospitals, industry, schools, community health organizations, private physicians and local and federal health agencies. The War Department announced that it had given the rank of second lieutenant to 300 nurses with no military experience to meet the acute shortage of nurses.

Three Antivivisection Bills Introduced in Congress

Three bills have been introduced in the 80th Congress which oppose, directly or indirectly, scientific experimentation on animals. House Resolutions 207 and 208, presented by Representative Bradley, Republican of Michigan, would punish persons transporting and receiving stolen dogs in interstate commerce and would prescribe penalties for keeping, injuring and destroying dogs in the District of Columbia. House Resolution 462, submitted by Representative Lemke, Republican, of North Dakota, prohibits "experiments on living dogs in the District of Columbia.

Coming Medical Meetings

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 10-11. Dr. Victor Johnson, 535 N. Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Chicago, Feb. 7-8. Dr. F. S. Crockett, 535 N. Dearborn St., Chicago 10, Chairman.

Central Surgical Association, Chicago, Feb. 20-22. Dr. Walter G. Maddock, 250 East Superior St., Chicago, Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, March 4-7. Dr. Willard O. Thompson, 30 N. Michigan Blvd., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, March 17-20. Dr. Glenn D. Earlson, 1133 Medical Arts Bldg., Dallas, Secretary.

Mid-South Postgraduate Medical Assembly, Memphis, Tenn., Feb. 11-14. Dr. Arthur F. Cooper, 1479 Carr Ave., Memphis, Secretary.

New Orleans Graduate Medical Assembly, New Orleans, Feb. 24-27. Dr. Max M. Green, 1430 Tulane Avenue, New Orleans 13, Secretary.

Pacific Coast Surgical Association, Seattle, Feb. 17-18; Victoria, B. C., Feb. 19-21. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.

Medical Legislation

MEDICAL BILLS IN CONGRESS

Cancer Research

Senator Pepper has reintroduced, as S. 93, his bill to authorize the President to undertake to mobilize at some convenient place in the United States an adequate number of the world's outstanding experts and coordinate and utilize their services in a supreme endeavor to discover means of **curing and preventing cancer.** Similar bills have been introduced in the House by Representative Dirksen, Illinois, as H. R. 100, by Representative Rooney, New York, as H. R. 292, and by Representative Douglas, California, as H. R. 780.

Representative Stevenson, Wisconsin, has also introduced a bill, H. R. 977, to provide for the mobilization of the scientific resources and knowledge of the United States for the purpose of seeking the causes and cure of **cancer, poliomyelitis** and certain other degenerative diseases of mankind.

Dental Health Programs

A bill introduced by Senator Pepper, Florida, for himself and Senator Murray, Montana, and Senator Aiken, Vermont, S. 178, proposes to amend the Public Health Service Act so as to provide assistance to states in developing and maintaining **dental health programs.**

Another bill, S. 176, introduced by Senator Murray, Montana, for himself and Senator Pepper, Florida, Senator Taft, Ohio, Senator Aiken, Vermont, and Senator Morse, Oregon, would provide for, foster and aid in coordinating research relating to **dental diseases** and conditions. A similar bill has been introduced in the House by Representative Harris, Arkansas, as H. R. 574.

National Science Foundation

Representative Celler, New York, has introduced H. R. 942, proposing to enact the "National Science Foundation Act" to promote the progress of science and the useful arts, to secure the national defense and to advance the **national health and welfare.** It would establish a National Science Foundation to be administered by an administrator appointed by the President, by and with the advice and consent of the Senate. In the foundation there would be a Division of Mathematical and Physical Sciences, a Division of Biological Sciences, a Division of Social Sciences, a Division of Health and Medical Sciences, a Division of National Defense, a Division of Engineering and Technology, a Division of Scientific Personnel and Education, a Division of Publications and Information and such other divisions, not to exceed three in number, as the administrator from time to time may establish after receiving the advice of a National Science Board.

Water Pollution Control

Several bills have been introduced to provide for **water pollution** control activities. H. R. 123, introduced by Representative Mundt, South Dakota, H. R. 315, introduced by Representative Spence, Kentucky, and H. R. 470, introduced by Representative Elston, Ohio. These bills would authorize the Surgeon General of the Public Health Service, in cooperation with other federal agencies and with state health authorities and interstate agencies, and with municipalities and industries, to prepare comprehensive programs for eliminating or reducing pollution and improving the sanitary condition of the surface and underground waters in or adjacent to any state. Grants-in-aid and loans would be made available.

Control of Barbiturates

A bill introduced by Representative Rogers, Massachusetts, H. R. 588, proposes to bring **the barbiturates** within the purview of the federal narcotic laws.

Miscellaneous

A bill introduced by Representative Lane, Massachusetts, H. R. 260, proposes to credit to active and retired officers of the Medical Department of the Army all **service performed as interns** in army hospitals on a civilian-employee status.

The construction of a **hospital for the insane** of Alaska would be authorized by H. R. 196, introduced by Delegate Bartlett, Alaska.

H. J. Res. 15, introduced by Representative Judd, Minnesota, would designate the week of February 14 in each year as **National Heart Week** and would authorize the President to issue annually a proclamation urging the people of the United States to give heed to this significant medical problem and to cooperate in all steps for its solution. The companion measure in the Senate, S. J. Res. 35, was introduced by Senator Bridges, New Hampshire.

A **veterans' hospital** at Taft, Okla., for Negro veterans would be authorized by H. R. 150, introduced by Representative Stigler, Oklahoma.

Representative Davis, Tennessee, proposes by H. R. 227 to authorize the President to appoint as commissioned officers in the Medical Corps of the Army and the Medical Corps of the Navy, on the recommendation of the Surgeon General of the Army or Navy, as the case may be, **x-ray technicians** who are regularly registered to practice as such in any state or in the District of Columbia.

A bill introduced by Representative Kelley, Pennsylvania, H. R. 254, would authorize the director of the Office of Vocational Rehabilitation to encourage, foster and assist in the development, establishment and maintenance of special services and facilities for **handicapped persons.**

A United States Commission on **Physical Fitness** would be established under the provisions of H. R. 220, introduced by Representative Buchanan, Pennsylvania, to promote the physical fitness of the inhabitants of the United States through physical training and competition in all athletic sports, camping and kindred activities. For the first fiscal year an appropriation of $25,000,000 would be authorized and thereafter such sum as the commission may recommend and the Congress may determine.

STATE LEGISLATION

California

Bills Introduced.—A. 229 proposes that the **testing of the sight and hearing of school children** be mandatory rather than permissive. A. 256, to amend the **workmen's compensation act,** proposes to prohibit any company from contracting with any physician, hospital or other person for the medical or surgical care or hospitalization of any injured employee on the basis of such physician, hospital or other person receiving a percentage of the gross premiums collected by an insurance company or on the basis of any percentage of the employer's payroll or on the basis of any fixed charges which are less than the rates adopted by the industrial accident commission. The proposal would further prohibit a physician, hospital or other person from paying over to any employer or insurance carrier a rebate for any sums received for the medical or surgical care or hospitalization of an injured employee. A. 330, to amend the **chiropractic act,** proposes that total or partial blindness shall not be a disqualification for a license to practice chiropractic nor shall any person otherwise qualified be denied the right to take an examination for such license because he is blind. A. 359 proposes to include chiropodists within the meaning of the term "physician" as used in the workmen's compensation act. S. 62, to amend the business and professions code, proposes the creation of a board of **naturopathic examiners.** Naturopathy is not defined, but the proposal would authorize the board to grant two forms of certificates: (**a**) naturopathic physician's certificate and (**b**) minor surgery and obstetrics certificate. The naturopathic physician's certificate would authorize the holder to diagnose and treat all human ailments and abnormalities by the use of such forces and substances as light, air, water, clay, heat, rest, diet, herbs, electricity, massage, Swedish movements, suggestive therapeutics, magnetism, physical culture and mental culture. The minor surgery and obstetrics certificate would authorize the holder to practi obstetrics and minor surgery according to accepted procedures but would not authorize the penetration of the eyes, or the cranial, thoracic or abdominal cavities of human beings, or the amputation of human arms, hands, fingers, legs, feet, or toes or the practice of plastic surgery.

Delaware

Bills Introduced.—H. 42 proposes to require each applicant for a **marriage license** to obtain a certificate from a duly licensed physician showing that the applicant has undergone a standard serologic test for syphilis and is not infected with such disease. S. 76, to amend the law relating to the distribution of certain drugs and preparations, proposes that the sale of penicillin, the sulfonamides and thyroid, and preparations containing them, may be sold or **dispensed only on prescription** of a duly licensed practicing physician, practicing dentist or practicing veterinarian.

Maryland

Bills Introduced.—H. 52, to amend **the medical practice act,** proposes to exempt therefrom persons treating human ills in accordance with the tenets of Christian science. H. 69 proposes the creation of a **state board of physical therapy examiners** and defines physical therapy as "the treatment of human injuries, diseases or disabilities by means of the healing properties of massage, ultraviolet rays, mechanical devices, heat, cold, air, light, water and electricity, but not by means of roentgen rays, radium, surgery or drugs." The proposal also states that a physical therapist is one who treats only patients diagnosed and referred by licensed medical doctors. H. 83, to amend the **chiropractic act,** proposes among other things, to define chiropractic as "diagnosis, the location of disalined or displaced vertebrae of the human spinal column, the procedure preparatory to and the adjustment by hand of such misalined or displaced vertebrae of the spinal column and its articulations, by any method not including the use of drugs, surgery or obstetrics, osteopathy, optometry or podiatry, or any branch of medicine for the purpose of relieving such interference and aiding in the restoration of health, provided that nothing herein contained shall be construed to prohibit the use of by any licensed chiropractor of all necessary electrical, mechanical, dietetic and sanitary measures incident to the care of the human body, for the purpose of relieving such interference."

North Dakota

Bill Introduced.—S. 38 proposes to require every physician, or other person authorized by law to practice obstetrics, who attends a pregnant woman for conditions relating to pregnancy, to take or cause to be taken a **sample of blood of such woman** at the time of the first professional visit and to submit such sample to an approved laboratory for a standard serologic test for syphilis.

Tennessee

Bill Enacted.—S. 15 has become chapter 2 of the public acts of 1947. It repeals the **naturopathic practice act** of Tennessee and provides that it shall hereafter be unlawful for any person, whether heretofore licensed or not, to practice naturopathy in the state.

GOVERNMENT SERVICES

ARMY

DEEP X-RAY CENTERS FOR RESEARCH AND TREATMENT

The Army Medical Department still operates 4 deep x-ray centers where patients are treated for cancer—Walter Reed General Hospital, Washington, D. C.; Beaumont General Hospital, El Paso, Texas; Army and Navy Hospital, Hot Springs, Ark., and Letterman General Hospital, San Francisco. During the war cancer was not a major problem at any time, the highest incidence rate being 0.34 per 1,000 per year, or about 3 men of every 10,000. Walter Reed General Hospital has one of the few million volt roentgen therapy machines in the world, and it is as easy to operate as the 200 kilovolt x-ray machine seen in many hospitals. A tumor board which convenes at Walter Reed General Hospital every week consists of the chiefs of surgery, laboratory, pathology and radiation therapy services, who consider each case of cancer individually and recommend the type of treatment.

HISTORY OF THE 36th GENERAL HOSPITAL

A brief history of the 36th General Hospital, Wayne University, Detroit, sponsored unit, was recently distributed to personnel who served with that unit to commemorate the first anniversary of its deactivation. The history follows the unit through its three and one-half years in North Africa, Italy and France. The foreword is written by Dr. Richard M. McKean, who served as chief of medical service during most of the hospital's activities overseas and later became its commanding officer. Originally the history was written by two noncommissioned officers, George A. Cavanaugh and John D. Gall, who served with the unit. It was revised by Dr. McKean for the anniversary.

WIDOWS MAY CLAIM TERMINAL LEAVE PAY

The widows, children or parents of former soldiers who died after honorable discharge from the Army and who had not claimed their terminal leave pay prior to their death are entitled to collect these payments, the War Department has announced. Such survivors should write immediately to the Finance Officer, U. S. Army, Army Finance Center, Building 204, St. Louis 20, for application. Only a small number of claims of this type have been received thus far, but it is estimated that in all about 40 million dollars is due eligible survivors of army personnel in this category.

NEW DIRECTOR OF ARMY MEDICAL LIBRARY

Col. Joseph H. McNinch, M. C., has been designated director of the Army Medical Library, Washington, D. C., succeeding Col. Leon L. Gardner, M. C. Colonel McNinch during the war served on the staff of Major Gen. Paul Hawley in the European theater and since returning to the United States has been chief of the historical division in the Surgeon General's Office. He graduated from Ohio State University College of Medicine in 1930 and went directly into the medical corps of the Army. He was recently awarded the Legion of Merit.

COLONEL FREER RETIRES

Col. Arden Freer, M. C., chief of the medical consultants division, Surgeon General's Office, will retire from active duty in February after thirty-two years of service and will join the staff of the medical director of the Veterans Administration in Washington. Colonel Freer was chief of the medical service at Walter Reed General Hospital and director of the department of internal medicine at the Army Medical Center in Washington from 1939 to 1942. During World War I he served with the First Division. Recently he was awarded the Distinguished Service Medal for "exceptionally meritorious service."

NEW HEAD OF MEDICAL CONSULTANTS DIVISION

The War Department has announced that Col. Henry C. Dooling, M. C., former chief health officer, the Panama Canal Zone, has been named chief of the medical consultant's division in the Surgeon General's Office to succeed Col. Arden Freer, recently retired. Colonel Dooling, a native of New Jersey, who entered the Medical Corps during World War I, held the temporary rank of brigadier general during World War II and was awarded the Legion of Merit. Formerly he was chief medical service officer, Beaumont General Hospital, El Paso, Texas, and chief of medical services at Fort Riley station hospital, Kansas.

MEDICAL OFFICERS APPOINTED

The War Department recently announced the appointment to the regular Army of the following medical officers:

Major Schuyler P. Brown	Lincoln, Neb.
Major Sheldon S. Brownton	La Grande, Oregon
Major Anthony Czerwinski	St. Louis
Major John R. Darrah	Spokane, Wash.
Capt. Lindsay J. Ervin	Montrose, S. D.
Major Donald L. Ferris	Cos Cob, Conn.
Major Vincent L. Frankfurth	Spartanburg, S. C.
Major Patrick H. Hoey	Pittsburgh
Capt. George M. Knauf	Rising Sun, Md.
Capt. George H. Kojac	New York
Major Clarence B. La Dine	Indianapolis
Capt. Robert A. McLane Jr.	Phoenix, Ariz.
Capt. Robert E. Nuernberger	Wakefield, Neb.
Major Harold D. Parks	Randolph Field, Texas
Major Albert D. Phillips	Sacramento, Calif.
Capt. Bradley W. Prior	Buffalo
Lieut. Charles O. Rixey	Washington, D. C.
Major John A. Schindler	East Ann Arbor, Mich.
Capt. Max L. Smith	Los Angeles

PERSONALS

Brig. Gen. Guy B. Denit has been appointed chairman of a legislative committee established to examine all current legislative proposals affecting the Medical portion of the War Department's legislative program. The committee will prepare a legislative program for the future needs of the Medical Department and will prepare data in support of, or in opposition to, current legislative proposals affecting the Medical Department.

Col. Frank L. Cole, M. C., director of the surgical consultant division, Surgeon General's Office, was recently elected a member of the board of governors of the American College of Surgeons.

Col. Wesley C. Cox, M. C., has been assigned as the new chief of the Army Industrial Hygiene Laboratory at Edgewood Arsenal, Maryland, with offices in the Surgeon General's Office. Colonel Cox recently returned from service in Panama, where he was Canal Department surgeon. At one time he was an instructor in bacteriology and preventive medicine at the Army Medical School, and Chief, 8th Corps Area Laboratory, Fort Sam Houston, Texas.

Col. Tom F. Whayne, M. C., has been appointed president of a board which will develop the medical portion of the War Department's program for aid to civilian populations in liberated countries.

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ARMY AWARDS AND COMMENDATIONS

Colonel James B. Anderson

The Legion of Merit was recently awarded to Col. James B. Anderson, M. C., U. S. Army, of Bradenton, Fla., who was the commanding officer of Ashburn General Hospital, McKinney, Texas, from February 1943 to October 1945, where, states the citation, "he rendered outstanding service and demonstrated unusual clinical ability and administrative skill in setting up and maintaining high standards in the care of patients. His meticulous attention to details and thorough knowledge of hospital work enabled him to suggest and have embodied many improvements in his hospital while it was under construction. Through his keen observation, mature judgment and signal ability to evaluate his personnel and their capabilities, he was able to assign them to positions where they could be of maximum benefit to the service and receive training preparing them for proficient service in overseas theaters. Colonel Anderson displayed indefatigable leadership, penetrating insight and loyal devotion to duty in organizing the Arthritic Center of Ashburn General Hospital at a high level of efficiency. His achievements contributed materially to the war effort, reflecting highest credit on himself and the military service. Dr. Anderson graduated from the Medical College of Virginia, Richmond, and entered the service Jan. 8, 1918.

Colonel Robert A. Trumbull

The Legion of Merit has been awarded to Col. Robert A. Trumbull, M. C., A. U. S., of Dallas, Texas, who as chief, personnel section, office of the surgeon, headquarters, Army Air Forces Training Command, during the period from May 1942 to September 1945, rendered valuable medical contributions by exhibiting great professional skill, sound judgment and an unusual ability to solve the multitudinous problems which confronted his department. The citation also stated that, assisting substantially in maintaining a superior level of professional care and in rendering distinguished services to the health of Army Air Forces Training Command personnel, Colonel Trumbull performed a service which reflects great credit on himself and the armed forces of the United States. Dr. Trumbull graduated from the Medical Department of Southern Methodist University, Dallas, Texas, in 1913 and entered the military service in May 1942.

Lieutenant Colonel Harold R. Hennessy

Lieut. Col. Harold R. Hennessy, M. C., A. U. S., formerly of Berkeley, Calif., was recently awarded the Bronze Star Medal, the citation calling attention to his meritorious service in connection with military operations against the enemy of the United States during the period April 2, 1945 to May 8, 1945 in Belgium and Germany. As public health officer in the office of the army surgeon, Lieutenant Colonel Hennessy demonstrated outstanding qualities of leadership by organizing and directing the public health control of displaced persons, refugees and the German civil population in the Rhineprovinz military district. Through his personal efforts the spread of typhus throughout the army area was halted in a remarkably short time, thus averting a critical problem. Colonel Hennessy's reliability, aggressiveness and tactful nature reflect great credit on himself and the armed forces of the United States. Dr. Hennessy graduated from the University of Minnesota Medical School, Minneapolis, and entered the service Feb. 21, 1943.

Lieutenant Colonel Frank P. Guidotti

The Legion of Merit was recently awarded to Lieut. Col. Frank P. Guidotti, M. C., A. U. S., of New York for performing exceptionally meritorious service in the Second Service Command from March 1942 to October 1945. The citation mentioned especially his work as chief medical examiner of the induction station, New York City, where his planning and reorganization of operating procedures resulted in saving considerable sums of money for the government and likewise conserved manpower by reducing operating personnel during a critical period. He contributed materially to the planning and the development of the medical facilities at the Army's Ground and Service Forces Redistribution Stations, Lake Placid, N. Y., and Atlantic City, N. J., and the separation centers in Fort Dix and Fort Monmouth, which also resulted in a saving of expense to the government. Dr. Guidotti, who graduated from the Regia Università di Napoli Facoltà di Medicina e Chirurgia, entered the service Oct. 8, 1940.

Lieutenant Colonel Francis B. Carroll

The Legion of Merit was recently awarded to Lieut. Col. Francis B. Carroll of Great Barrington, Mass., who distinguished himself in the performance of outstanding service as epidemiologist and chief, Preventive Medicine Branch, Office of the Surgeon, First Service Command, from June 1943 to October 1945. By his sound judgment, wide professional knowledge and meticulous efforts, states the citation, he organized and supervised a program of preventive medicine which was entirely responsible for the low incidence of epidemic and contagious disease within the Service Command. His investigation during an outbreak of meningococcic meningitis resulted in obtaining scientific information in the use of sulfadiazine to control the spread of this disease and was of inestimable value in preventing its spread throughout the armed forces. He conducted pioneer studies in the determination of the degree and rate of rise in immunity produced by inoculations with diphtheria and tetanus toxoid, and his observations brought about many improved methods of immunization. Dr. Carroll graduated from the University of Rochester School of Medicine and Dentistry in 1935 and entered the service Feb. 10, 1943.

Lieutenant Colonel James J. Callahan

The Legion of Merit was recently awarded to Lieut. Col. James J. Callahan, M. C., A. U. S., of Oak Park, Ill., who, as consultant in orthopedic surgery, Fourth Service Command, from June 1944 to August 1945 performed a diversity of tasks. The citation referred especially to the fact that in the face of unprecedented expansion of orthopedic service within the command he formulated and carried into effect the entire program, simultaneously maintaining an exceptionally high standard of treatment for thousands of orthopedic cases. He organized, staffed and secured supplies for brace shops at all general and regional hospitals and supervised training of orthopedic mechanics. He guided experimental work on combat boots at Fort Benning, Georgia, and his services were of inestimable value in determining the correct type of combat boot to be worn by the foot soldier. Dr. Callahan graduated from Loyola University School of Medicine, Chicago, in 1928 and entered the service Nov. 5, 1943.

Major Hugh W. Savage

The Legion of Merit was recently awarded to Major Hugh W. Savage, M. C., A. U. S., of Fort Worth, Texas, who as chief, Domestic Air Evacuation, and as commanding officer, 830 Medical Air Evacuation Squadron, Air Transport Command, from May 1944 to December 1945, was responsible for the foresighted and thorough planning of the safe and expeditious system for returning casualties to the United States. The citation says that his resourcefulness, ingenuity and unstinting devotion to duty reflect great credit on himself and the armed forces of the United States. Dr. Savage graduated from the University of Arkansas School of Medicine in 1941 and entered the service July 1, 1942.

Captain Alfred R. Wollack

The Soldier's Medal has been awarded to Capt. Alfred R. Wollack, M. C., A. U. S., of Park Ridge, N. J., who on Dec. 21, 1945 aboard the S. S. *Athos II* made his way across its hurricane engulfed deck to administer first aid to military personnel injured by forces of the storm. The citation described how his calm procedure under difficult conditions greatly improved the comfort and morale of passengers and was indicative of heroism in the highest degree. Dr. Wollack graduated from New York University College of Medicine in 1942 and went on active duty in the Army in July 1943. He has been awarded also the Bronze Star Medal with Oak Leaf Cluster.

Captain William A. Byrne

The Bronze Star was recently awarded to Capt. William A. Byrne, M. C., A. U. S., of Seneca Falls, N. Y., "for meritorious achievement in connection with military operations against the enemy from Dec. 16, 1944 to Jan. 8, 1945 in Luxembourg and Belgium. Throughout this period," the citation disclosed, "Captain Byrne directed the operation of his casualty clearing station in a most efficient and exemplary manner. Although under heavy enemy shell fire he fearlessly went about coordinating the work of his station and maintained an efficient evacuation system. When his station became handicapped by a shortage of medical officers and heavy casualties, he worked tirelessly for long hours treating the wounded. The outstanding devotion to duty, ceaseless energy and professional skill displayed by Captain Byrnes reflects great credit on himself and are in keeping with the highest traditions of the military service." Dr. Byrne graduated from Hahnemann Medical College in 1943 and entered the service Jan. 7, 1944.

NAVY

RESERVE OFFICERS WANTED FOR ACTIVE DUTY

Reserve Medical Officers and Pharmacists now have an opportunity to return to active duty at one of the major naval air stations of the Naval Air Reserve Training Command or at one of the Naval Air Reserve Training Units. Reserve officers and pharmacists who are interested should initiate letters to the Bureau of Naval Personnel through the Chief of Naval Air Reserve Training, Naval Air Station, Glenview, Ill., listing three or four stations at which duty is desired in order for preference. Personnel are desired not above the rank of Commander in the Medical Corps. Government quarters are available at many of the major naval air stations. Some of these billets carry orders to duty involving flying for designated Naval Flight Surgeons.

ADDRESS BY DR. J. B. S. HALDANE

The fourth in a series of lectures at the Naval Medical Center, Bethesda, Md., was delivered January 9 by Dr. J. B. S. Haldane, professor of biometry, University College, London, England. Officers of the Army and Navy Medical Corps, Public Health and Veterans Administration and civilian doctors of the District of Columbia and Montgomery County were invited to attend the lecture, after which refreshments were served. Dr. Haldane has continued the work of his late father, the scientist J. S. Haldane, who was a foremost authority on respiration.

SCHOOL OF TROPICAL MEDICINE IN GUAM

At the opening of the new Naval School of Tropical Medicine in Guam Sept. 31, 1946 the speakers were Dr. Victor G. Heiser, Rear Admiral H. W. Smith, Ret., Capt. L. B. Marshall, M. C., in command of the new Naval Medical Center, of which the Institute of Tropical Medicine is a unit, Commodore W. E. Kellum, M. C., from Pearl Harbor, fleet medical officer, Comdr. S. A. Britten, M. C., who spoke on tuberculosis in native populations, Capt. E. H. Hudson, M. C., on yaws, and Capt. J. J. Sapero, M. C., on malaria. The School of Tropical Medicine is under the direction of Comdr. F. A. Butler, M. C. The first class at the school comprised sixteen medical officers, who subsequently will be assigned to military duties throughout the Pacific area.

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VETERANS ADMINISTRATION

HOME TOWN MEDICAL CARE FOR VETERANS

Veterans with service incurred disabilities in 32 states, Hawaii and the District of Columbia may obtain free medical treatment from physicians of their choice under two different plans of the Veterans Administration home town medical care program. Both plans enable veterans with service incurred or service aggravated ailments, on approval of their Veterans Administration medical officer, to go to the local physician of their choice for treatment of that service connected ailment only. About half the states are operating under the so-called Michigan plan, the others under the so-called Kansas plan.

Under the Michigan plan a nonprofit organization or corporation sponsored by the state medical society handles the administrative details for the Veterans Administration, including the payment of cooperating physicians. The Veterans Administration in turn, pays the organization a lump sum for the professional services rendered, plus a small additional amount for handling the administrative work. Under the so-called Kansas plan all administrative work, including payment of individual doctors, is taken care of by the Veterans Administration, and there is no go between organization. Under both plans state medical organizations serve constantly to see that veterans are at all times getting the best possible medical attention.

The following medical organizations are cooperating with the Veterans Administration under the so-called Michigan plan:

California Physicians Service, Los Angeles
Colorado Medical Service, Inc., Denver
Hawaii Medical Service Association, Honolulu
Associated Hospital Service of Maine, Portland
Michigan Medical Service, Detroit
Montana Physicians Service, Helena
The Hospital Saving Association of North Carolina, Inc., Chapel Hill
Oregon Physicians Service, Portland
South Dakota State Medical Association, Sioux Falls
Hospital Benefit Association of South Carolina, Greenville
Minnesota State Medical Association, St. Paul
Washington State Medical Bureau, Seattle
Iowa Medical Service, Des Moines
Wisconsin Veterans Medical Service Agency, Madison
Medical Service Administration of New Jersey, Newark
Veterans Medical Service Plan of New York, New York
North Dakota State Medical Association, Williston

The following medical groups are cooperating with the Veterans Administration under the so-called Kansas plan:

Florida Medical Association, Jacksonville
Wyoming State Medical Society, Casper
Louisiana State Medical Society, New Orleans
Arkansas Medical Society, Fort Smith
Connecticut State Medical Society, New Haven
Medical Society of the District of Columbia, Washington
Medical Association of Georgia, Atlanta
The Illinois State Medical Society, Monmouth
Idaho State Medical Association, Lewiston
Indiana State Medical Association, Indianapolis
Kansas State Medical Society, Wichita
Ohio State Medical Society, Cincinnati
The Medical Society of the State of Pennsylvania, Pittsburgh
Medical Service Bureau of the Utah State Medical Association, Salt Lake City
West Virginia State Medical Association, Charleston
Nevada State Medical Association, Reno
Tennessee State Medical Association, Memphis

HOSPITAL NEWS

The army engineers have let the architect-engineer contract for the Veterans Administration hospital at Erie, Pa., which will be a 200 bed general medical and surgical hospital.

President Truman has approved the purchase of 18 acres of land on University Avenue in West Philadelphia, Pa., as a site for a 1,000 bed Veterans Administration hospital adjoining the Philadelphia General Hospital and the University of Pennsylvania School of Medicine. The President has also approved sites in Olmstead Park in Boston and in Syracuse, N. Y., for 1,000 bed veterans' hospitals. The Syracuse project will involve the removal of an abandoned cemetery and the reinterment of some 4,500 bodies in a new location. This hospital will be built on the 11½ acres adjoining Syracuse University Medical School.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Gaines, John L.....Crossville
Harris, Carlton L.....Wadley
Ingram, George H.....Tuscaloosa
O'Rear, Harry B.....Jasper

Arizona

Burke, Edward L.....Winslow
Gunter, Roy A.....Tucson

California

Beerman, Herman M.....Los Angeles
Benvenuto, John A.....Encinitas
Daly, Joseph L. Jr.....San Pedro
Holden, Isidore.....W. Los Angeles
McLin, Edward D.....San Francisco
Marinacci, Alberto A.....Monterey Park
Reese, Lewis L.....Berkeley
Riley, William H.....Fresno

Connecticut

Field, William W.....Fairfield
Flynn, John B.....Oakville
Gallo, Francis.....Winsted
Gardner, Sidney M.....Hartford
Marcus, Emanuel.....West Hartford

Florida

Herndon, Oma E.....Lake City
Ramage, Raymond C.....Jacksonville

Idaho

Stone, Alfred M.....Boise

Illinois

Kannapel, Lowell E.....Peoria
Raich, John A.....Dwight
Rankin, James T.....Rockford
Vanikiotis, Peter.....Chicago
White, Gregory J.....Oak Park
Young, Harold E. Jr.....Chicago

Indiana

Dittmer, Thomas L.....Kouts
Ralph, Robert D.....Shelbyville

Kentucky

Barnes, Malcolm L.....Beaver Dam
Jester, Arthur M.....Winchester

Louisiana

Bourgeois, David E.....Jeanerette
Fama, Joseph R.....Plaquemine
Summer, William C.....Minden
Wiltse, Leon L.....New Orleans

Maine

Archambault, Philip L.....Lewiston
Jacobson, Payson B.....Portland
Lord, Edwin M.....Skowhegan

Michigan

Hackim, Albert S.....Detroit
Klewicki, Herman A.....Hamtramck
Power, John R.....Kalamazoo
Rebuck, John W.....Detroit
Taylor, Clifford B.....Albion

Mississippi

Bonney, Robert T.....Enterprise
Dabbs, Clyde H. Jr.....Tupelo

Missouri

Bryan, James H.....Webster Groves
Ciapciak, Stanley J.....St. Louis
Cleary, Frank.....St. Louis
Gale, Joseph F.....Chillicothe
Kaplan, Albert.....St. Louis
Pierson, William W.....Kansas City
Tate, Waddy P. Jr.....St. Louis

Montana

Hines, Ralph E.....Fort Harrison

New Jersey

Carras, Peter D.....Paterson
Dos Cher, Ned.....Westfield
Galbraith, Biven R.....Stelton
Galeota, William R.....White House Sta.
Garzieri, Anthony R.....Totowa Borough
Gleason, Thomas P.....Bayonne
Gross, Kenneth E.....Union
Nickau, Robert H.....Rahway
Rizzoli, Hugo V.....Newark
Stamler, Jeremiah.....W. Orange
Wahrenberger, Walter.....Woodcliff
Willis, George G.....Bound Brook

New Mexico

Bass, Hugh L.....Albuquerque
Clauser, Alvin R.....Albuquerque

New York

Bassell, Arthur .....New York
Berkwits, Abner.....Brooklyn
Betlejeski, Zehu J.....Altamont
Brill, James R.....Larchmont
Cordwell, Robert W.....Ogdensburg
Corey, Robert T.....Angelica
Egbert, John H.....Amsterdam
Emerson, Ralph S.....Roslyn Heights
Esposito, Neil.....Brooklyn
Gaetane, Joseph A.....Long Island
Galen, Jack H.....Brooklyn
Gallardo, Edward.....Ossining
Garb, Solomon.....New York
Goodyear, Stephen.....New York
Heinicke, Horst J.....Rochester
Henley, Jean E.....New York
Jeannopoulos, John L.....New York
Kamras, Leon G.....Bronx
Kaney, Emil M.....Larchmont
Kaplan, Leonard A.....New York
Lang, Joseph T.....New York
Latimer, Clarence V. Jr.....Deposit
Lehner, Jerome.....Kingston
Light, Jacob S.....Brooklyn
Merle, James J.....College Point
Pesquera, Gilberto S.....New York
Potozky, Henry.....New York
Ralph, Fenn T.....Corinth
Ralph, Lester I.....New York
Schneider, George P. Jr.....White Plains
Smith, Jerry.....Brooklyn
Taplin, George V.....Rochester
Tesluk, Henry.....Buffalo
Vaughan, Lawrence H.....Brooklyn
Weissman, George.....Bronx
Zelman, Morris.....Brooklyn

North Dakota

Westley, Kent F.....Cooperstown

Ohio

Alison, John Jr.....Cleveland Heights
Baab, Orren D.....Canton
Beery, Walter C.....Lima
Benzon, George H. III.....Cleveland
Flachs, Kamillo.....Cincinnati
Randall, Samuel J. II.....Chillicothe
Tatum, Carroll F.....Akron
Veber, Donald G.....Shaker Heights

Oklahoma

Perry, Fred J.....Tulsa

Oregon

Keller, George F.....Portland

Pennsylvania

Ajac, John C.....Hanover
Belmont, Herman S.....Philadelphia
Botkin, Robert F.....Duquesne
Chaffee, John S.....Erie
Ciaccia, Nicholas L.....Pittsburgh
Fisher, John E.....Philadelphia
Galia, Joseph H.....Eddystone
Ginder, David R.....Palmerton

Pennsylvania—Continued

Golomb, Milton W.....Pittsburgh
Goodman, David H.....Philadelphia
Groff, Harvey D.....Quakertown
Hall, Robert L.....Philadelphia
Hresan, Michael G.....St. Clair
James, Richard T. Jr.....Philadelphia
Kaiser, Robert F.....Philadelphia
Kaminski, Walter S.....Philadelphia
Kehm, Vincent A.....York
Kurtz, Charles H.....Altoona
Machella, Thomas E.....Freeland
Miller, Allen C.....New Oxford
Miller, Francis G.....Chester
Mohnach, Vladimir M.....Philadelphia
Nicklas, Floyd W.....Oakmont
Rambach, Leonard.....Lancaster
Rawnsley, Herbert H.....Ridley Park
Rees, David T.....Hyndman
Reichwein, George F.....Ashland
Rhoades, Earl J.....W. Pittston
Roberts, Brooke.....Bala Cynwyd
Shoff, John F.....Madera
Taylor, Charles F.....Harrisburg
Winter, John C. II.....Williamsport

Rhode Island

Pianka, Wallace J.....Providence

South Carolina

Alion, John J.....Columbia
Hollifield, William C.....Bamberg
Kahn, Bernard I.....Sumter
Scurry, John C.....Greenwood

Tennessee

Baker, Joseph E.....Memphis
German, Richard M. Jr.....Franklin
Henry, Richard.....Shelbyville
Rapp, Edwin W.....Memphis
Schull, Lawrence G.....Tullahoma

Texas

Behrman, James M.....Dallas

Utah

Ishida, Hiraku.....Topaz

Vermont

Amidon, Richard W.....Burlington

Virginia

Cibelli, Louis A.....Roanoke
Farrow, Reginald C.....Richmond
Ford, Charles P. Jr.....Richmond
Kimberly, David.....Salem
Liddington, Charles E.....Alexandria
Longan, Robert C. Jr.....Richmond
Meredith, Henry C. Jr.....Norfolk

Washington

Burgess, Ernest M.....Vancouver
Perry, Raymond M.....Pasco
Sine, Arnot C.....Tacoma

Wisconsin

Beffel, John M. Jr.....Wauwatosa
Hartman, John T.....Janesville
Mace, Norman C.....Mendota

Wyoming

Alley, Ralph M.....Opal, Lincoln City
Rae, Harold B.....Torrington

Puerto Rico

Gallardo Jose A.....Santurce

Hawaii

Hirsch, Louis.....Hilo, Hawaii

Not Relieved from Active Duty

Katz, Jerome B.....New Orleans

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MEDICAL OFFICERS RELEASED BY THE NAVY

NAVAL RESERVE MEDICAL OFFICERS RECOMMENDED FOR RELEASE FROM ACTIVE DUTY

Arkansas

Bryant, Emmett P.....El Dorado
Hutchison, Ernest L.....Pine Bluff
Shinn, Bonner L.....Russellville
Stevenson, Carl R. Jr. .....Lititle Rock

California

Benner, Winston W.....Santa Rosa
Brown, Lawrence E.....Oakland
Chiapella, William C.....Piedmont
Clark, Orlo H.....San Francisco
Dunford, Phillips A. Jr.....Berkeley
Francis, Cyril H. C.....Los Angeles
Galeno, William A.....San Francisco
Klinefelter, Philip D.....Tulare
Klinefelter, Robert P.....Los Angeles
Langstroth, Lovell Jr.....San Francisco
McReynolds, Roy T.....Pacific Palisades
Manwaring, John H.....Palo Alto
Milejnek, Leland A.....Piedmont
Niebergall, Herbert A.....Los Angeles
Pinelli, Roy W.....San Francisco
Reich, Thomas.....Oakland
Schiro, Frank G.....Sacramento
Sheldon, John F.....Pasadena

Delaware

Mick, Felix.....Milford
Tucker, Leonard.....Wilmington

District of Columbia

Bailes, Lucius C.....Anderson
Collins, Richard L.....Washington
Devney, James W.....Washington
Holden, Raymond T.....Washington
Irani, Ardesbir B. Jr.....Washington
Merrill, Keith Jr.....Washington
Price, Richard H.....Washington

Idaho

McClusky, David A.....Buhl
Mihelich, Lewis.....Boise

Illinois

Douglas, John E.....Chicago
Firoved, James W.....Monmouth
Hardinger, John D.....Mattoon
Head, John F.....Oak Park
Kratz, Stephen C.....Monticello
Lawder, Homer L.....Jerseyville
Moorman, Henry D. Jr.....Aurora
Nock, Wesley S.....Chicago
Olivieri, Ernest P.....Chicago
Palmisano, Ignatius J.....Chicago
Robertson, Alan M.....Chicago
Samorajski, Anthony S.....Chicago
Sills, Robert A.....Chicago
Wright, John E.....Chicago

Louisiana

Bertucci, Emile A. Jr.....New Orleans
Craven, Joseph F.....New Orleans
Dastugue, Fernand J. Jr...New Orleans
King, John A.....New Orleans
Knight, Charles D.....Shreveport
Marmelszadt, Willard.....New Orleans
Menville, John G.....New Orleans
Middleton, Theo F.....New Orleans
Perret, Joseph M. Jr.....New Orleans
Robertson, Roy L.....Shreveport
Samson, Clarence L. M.....Crowley
Spaar, Albert P. Jr.....New Orleans
Thompson, Ben F. Jr.....Baton Rouge
Trautman, Paul.....New Orleans
Young, Bennett H.....Opelousas

Maine

Files, Ernest H.....Westbrook
Lehrman, Harold B.....Portland
Stott, Ardenne A.....Bath
Twaddle, John A.....Bethel

Maryland

Coffey, Jerome J.....Silver Spring
Farber, Robert E.....Sparrows Point
Hobelmann, Charles F.....Baltimore
McLean, James E.....Cumberland
Newcomer, William.....Hagerstown
Podolsky, William G.....Baltimore
Richards, Granville H. Jr...Port Deposit

Minnesota

Ehrlich, Sol P.....Minneapolis
Fogelberg, Emil J.....St. Paul
Forsgren, Arthur L...International Falls
Godward, Alfred C.....Minneapolis
Grabow, John J. Jr.....Duluth
Gullickson, Glenn Jr.....Minneapolis
Johnson, Carl L.....Minneapolis
Johnson, Einer W. Jr.....Bemidji
Kallsen, Robert A.....Pipestone
Klinkenberg, Royle B.....Rochester
MacCarty, Collin S.....Rochester
Martin, William B.....Duluth
Muccilli, Albert C.....Duluth
Schaefer, Joseph A.....Shakopee
Schneidman, Norman R.....Minneapolis

Mississippi

Boyette, Curtiss G.....Shelby
Burris, Malcolm B.....Clinton
Harthcock, Martin B. Jr.....Clarksdale
McFadden, Joseph T.....Oxford
Ricks, Henry C. Jr.....Jackson
Taylor, Charles D. Jr.....Pass Christian

Missouri

Brower, Clyde L.....Independence
Callaway, Guy D. Jr.....Springfield
Duderstadt, Warren McC...Kansas City
Gerst, Aloysius C.....St. Louis
Godwin, Robert W.....St. Louis
Harrington, Geo. L. Jr.....Independence
Kempster, Stephen W.....Columbia
Knight, Jack V.....Osceola
Meagher, Arthur J.....St. Louis
Moore, Louis T.....Kansas City
Proud, Gideon O.....Richmond Heights
Province, William Jr.....Kansas City
Remley, William A.....Kansas City
Sherwin, Charles S.....St. Louis
Shull, George D.....Jefferson City
Tannheimer, John F.....St. Joseph
Talty, Matthew H. Jr.....St. Joseph

Nebraska

Cassel, Ralph L.....Geneva
Cline, Frank Jr.....Auburn
Dean, George W.....Lincoln
Everett, Harry H.....Lincoln
Hansen, Hodson A.....Minden
McDonnell, Thomas R.....Fairbury
Miller, Burdette L.....Omaha
Newkirk, John R.....Omaha
Panter, Ed.....Hebron
Pitcaithley, Harry W.....Lincoln
Pollard, Marven J.....Fairbury

Nevada

Corvino, Leo Frank.....Reno
Gerow, Lynn B.....Reno
Samuels, Frank W.....Reno

New Hampshire

Bergeron, Lawrence N.....Rochester
Houde, Raymond W.....Seaford
Prybylo, John A.....N. Walpole

New Mexico

Floyd, Bedford F. Jr.....Taos
Hubbard, David G.....Dexter
Pijoan, Michel.....Albuquerque
Warren, Jack.....Albuquerque

New York

Birnbaum, Harry A.....Monticello
Cowdery, John S.....New York
Duffy, Benedict J. Jr.....Rochester
Egan, John T. Jr.....Jamaica, L. I.
Haswell, Forrest M.....Hoosick Falls
Jones, Richard J.....Buffalo
Knapp, James W.....Rochester
Matheson, John A.....Staten Island
Moore, Frank Jr.....Brooklyn
Perlmutter, Irwin.....Brooklyn
Pijanowski, Walter J.....Schenectady
Rosenthal, Harry H.....Brooklyn
Samson, Donald C.....Vernon Center
Tower, Donald B.....New York
Wawro, Walter J.....Syracuse

North Carolina

Berry, James W.....Bakersville
Bundy, James B.....Fayetteville
Ingram, William B.....Norwood
Jones, Paul E. Jr.....Farmville
Lampley, William A.....Hendersonville
Sawyer, Walter W. Jr.....Elizabeth City
Shields, William E.....Summerfield
Wilkes, Marcus B. Jr.....Laurenburg

Ohio

Adams, George D.....Vernon
Breidenbach, Warren C. Jr.....Dayton
Finlayson, M. W.....Cleveland Heights
Greene, George J.....Cleveland
Klefstad, Lloyd H.....Cleveland
McAllister, William B. Jr.....Cleveland
Minelli, Anthony J.....Cleveland
Price, Henry L.....Toledo
Svec, Edward C.....Solon
Thomas, John M.....Canton

South Carolina

Bunch, George H. Jr.....Columbia
Cline, Lucius M. Jr.....Charleston
Morrison, Chas. W.....Lancaster
Nettles, John B.....Columbia
Quattlebaum, James T.....Columbia
Wilkins, McMurry Jr.....Greenville

Tennessee

Adams, William M.....Memphis
Beeler, Troy J.....Luttrell
Parker, Roy W.....Nashville
Reaves, Robert G. Jr.....Knoxville

Texas

Hunter, Thomas R. Jr.....Lampasas
Love, Horace G. Jr.....Dallas
Rutledge, Art H.....Denison
Skripka, Charles F.....Galveston

Vermont

Harwood, Donald H.....Dorset
Oberlander, Andrew J.....Northfield
Pache, Henri L.....Burlington
Perry, John M.....Plainfield
Smith, Edward L.....Montpelier
Smith, Roger F.....Waitsfield

Wisconsin

Brick, Enoch B.....Wausau
Christofferson, James W.....Waupaca
Lahmann, Albert H.....Wauwatosa
Ramlow, Robert W.....Wauwatosa
Randolph, William C.....Manitowoc
Scherbel, Arthur L.....Madison

CORRECTION

Elliott, Raymond G.....Kansas City, Mo.

This name, which appeared under Kansas in THE JOURNAL, Nov. 2, 1946, page 526, was misspelled.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Bulletin on Monthly Basis.—Beginning January 3 the *Bulletin* of the San Diego County Medical Society went on a monthly basis rather than biweekly. It is expected that the publication will be enlarged. Dr. William H. Gerstweit Jr., San Diego, is the editor.

Personal.—Dr. Otto Guttentag, University of California Medical School, Berkeley-San Francisco, has been granted a temporary leave of absence in order to fill his appointment as consultant on medical education in Germany with the office of the military government in Germany.——Dr. Charles Calhoun Hedges, Vallejo, former health officer of Kings County, has been appointed health officer of Tulare County. A graduate of the University of Virginia, he held full time county health offices in Virginia and West Virginia before coming to California in 1943.

Conference on Alcoholism.—Alcoholism as a public health problem will be the subject for discussion at a conference of physicians, psychiatrists and social workers February 12 in Rodger Young Auditorium, Los Angeles. The conference, sponsored by the Welfare Council, Southern California Society for Mental Hygiene and individual members of Alcoholics Anonymous, Inc., is planned as an aid to alcoholic addicts through the use of medical science, education and understanding. On the program will be Dr. Anton J. Carlson, president and scientific director of the Research Council on Problems of Alcohol; Joseph Hirsh, associate director of the Research Council; Drs. Karl M. Bowman, San Francisco; Lawrence Kolb and Mrs. Dora Shaw Heffner, State Department of Mental Hygiene, Sacramento, and Richard McGee, director of Corrections, California.

CONNECTICUT

Resigns from Medical Examiners Board.—Dr. John C. Rowley, Hartford, a member of the Connecticut Board of Medical Examiners since 1916, declined reappointment to the board December 31. Dr. Wilmet C. Townsend, Hartford, was appointed for a five year term beginning January 1. Dr. Townsend received his degree in medicine from Harvard Medical School, 1925. He has been engaged in the practice of internal medicine and is attending physician at Harvard Hospital. He served in the medical corps, A. U. S., from September 1942 until January 1946, when he was discharged as a lieutenant colonel.

Yale Receives Klebs Library of Medical History.—After a delay of almost four years the extensive medical library of the late Dr. Arnold C. Klebs, Nyon, Switzerland, has been delivered to the Yale Medical Library in New Haven. Before his death in March 1943 Dr. Klebs, although not a Yale man, was persuaded by the late Dr. Harvey Cushing, Yale 1891, to deed his collections to Yale University. His library of more than 22,000 titles was carefully packed under the supervision of Dr. A. C. Breycha-Vauthier, deputy librarian for the United Nations Library, and stored for the duration of the war at Geneva, Switzerland. The arrival of the Klebs gift marks the fulfilment of Dr. Cushing's original idea of bringing together at Yale his own books on the history of medicine together with the collections formed by his intimate friends, Drs. Klebs and John F. Fulton, Sterling professor of physiology, Yale University School of Medicine.

ILLINOIS

Seventeen Counties Vote for County Health Departments.—Seventeen counties have been added to the list of five others in Illinois which have established locally financed and administered county health departments. The Illinois State Department of Public Health and the Illinois Statewide Health Committee have been working since 1942 for full coverage of the state by full time provisional staff health departments in cities and counties. Of the one hundred and two counties in Illinois, twenty-two are in a position to profit by the type of public health protection which two thirds of the other counties in the United States enjoy, it is reported. In the November election one four-county and three bi-county health departments were authorized.

Chicago

Public Health Institute Closes Its Doors.—The Public Health Institute, a nonprofit clinic for the treatment of venereal diseases founded in 1920 and for many years located at 159 North Dearborn Street, according to the Chicago *Tribune*, has closed its doors. The assets, which are said to be comparatively small, will be given to Northwestern University to establish a fund for the treatment and study of venereal disease and other public health problems. The institute from the beginning had been sponsored by a group of well known business men. The *Tribune* also points out that an increase in reported venereal diseases has occurred in Chicago. For the year ended June 30, 1946 the number of cases is said to have totaled 42,097 compared with 29,119 for 1942-1943. The number of cases of gonorrhea reported is said to have increased from 12,000 in 1942 to 25,000 in 1945.

Symposium on Medicolegal Problems.—Under the sponsorship of the Institute of Medicine of Chicago, the Chicago Medical Society and the Chicago Bar Association, a series of five meetings have been scheduled for Tuesday evenings beginning February 4 and extending through March 4. Meetings will be held at the Chicago Bar Association, 29 South La Salle Street. "Psychiatry and Civil Law" is the subject of the first meeting, February 4, with James F. Oates Jr., president, Chicago Bar Association, presiding. The medical presentation will be made by Dr. Francis J. Gerty, professor of psychiatry and head of the department, University of Illinois College of Medicine. The honorable Harry M. Fisher, judge of the circuit court of Cook County, will give the legal presentation. On February 11 "Psychiatry and Criminal Law" will be discussed with Dr. George F. Lull, Secretary and General Manager, American Medical Association, presiding. Dr. Paul L. Schroeder, professor of criminology and head of the Institute for Juvenile Research, University of Illinois College of Medicine, and William F. Crowley, first assistant state's attorney, Cook County, will give the medical and legal presentations. The third subject of the symposium to be presented February 18 is "The Skeleton Speaks: Medical and Legal Implications" with Werner W. Schroeder, Esq., of the Chicago Bar Association, presiding. Wilton M. Krogman, Ph.D., associate professor of anatomy and physical anthropology, University of Chicago, and A. R. Peterson, Esq., of the Chicago Bar Association, will make the presentations. The remainder of the program will be announced in a later issue.

Report on Sunshine, Smoke and Dust.—The U. S. Public Health Service made a study of air pollution in Chicago as a part of a survey of health conditions requested by the city and county governments. The report referred to the surveys on dust which have been made for many years. Each month analyses of dust fall precipitation is still being made at twenty-two stations in Chicago. The monthly average per square mile of dust fall for the year 1945 varied from 212.10 tons at 33 North La Salle Street to 24.06 tons at 7350 Pratt Boulevard. The average monthly dust fall per station was 68.40 tons per square mile, and this was a decided improvement, as shown by the records of twenty years ago. The control of air pollution, the report says, is difficult. About 1,200 locomotives, 25 roundhouses, 450 steamship arrivals per season, 400,000 buildings and other miscellaneous items contribute to the smoke problem. The U. S. Weather Bureau reported that in 1945 Chicago received only 56 per cent of the possible hours of sunshine. Smoke alone is not responsible for this percentage but, combined with fog and partial cloudiness, is a factor in the sunshine record. Chicago has a department of smoke abatement, but the appropriation for this department in 1946 failed to provide adequate personnel to observe all smoke violations and nuisances in the department's seven districts. The report recommended that the Cook County Commission conduct a survey with a view to establishing rules and regulations for smoke abatement and control of air pollution, and that the industrial communities in Indiana near Chicago—Hammond, Whiting, Gary, Indianapolis, Indiana Harbor and East Chicago—be urged to adopt effective legislation for smoke abatement and air pollution control. The railroads, it is estimated, account for about 25 per cent of the city's smoke.

MICHIGAN

Oakland County Deputizes Coroners.—Under a special legislative act, Oakland County now deputizes private physicians to act as coroners when needed. Heretofore they have been elected. Under the new setup doctors will be paid $7 for each call plus mileage. They may be summoned by the county health department or the police. Economy as well as efficiency is the goal of the new system.

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Diagnostic Centers for Rheumatic Fever.—The Michigan State Medical Society has established diagnostic centers for rehumatic fever in nine cities throughout the state—Lansing, Grand Rapids, Kalamazoo, Bay City, Traverse City, Jackson, Ann Arbor, Flint and Marquette. Family doctors are invited to bring cases to these centers for diagnosis, laboratory tests and consultation. Clinics were established when the society learned that many Michigan youths were rejected from military service because of cardiac trouble due largely to rheumatic fever.

Typhoid Carriers in Michigan.—For the past thirteen years not 1 case of typhoid has been traceable to a public water supply in Michigan, according to the department of health. The only source of the disease now is carriers, the number of which has decreased from 288 to 262 in 1946. All known typhoid carriers are registered with the health department and visited four times each year by state or local health officials to be sure that they are not employed to handle food or to work in water treatment plants. Eighty-eight cases of typhoid were reported in the state during 1946, as compared to 5,122 in 1900.

MISSISSIPPI

Legislature Grants Out of State Scholarship Loans.—Mississippi is the first state to grant scholarship loans to its young men and women to be used to study medicine in various other schools throughout the nation. The Mississippi State Medical Education Board recently granted forty-seven such scholarships. The University of Mississippi School of Medicine, the only medical school in the state, offers courses in the basic medical sciences but offers no clinical work. West Virginia offers its residents outstate medical scholarships for study in Virginia only.

NEW JERSEY

Certificates of Appreciation.—At a ceremony in Newark, November 20, Certificates of Appreciation from the War Department were presented to ten New Jersey physicians, each of whom had served continuously for three or more years on the Induction Examining Board in the New Jersey-Delaware Recruiting and Induction District. The certificates were signed by Secretary of War Robert P. Patterson and Major Gen. James A. Van Fleet, commanding the Second Service Command. In the citations the War Department expressed its appreciation for patriotic service in a position of trust and responsibility to Herbert R. Van Ness as coordinator of activities of all civilian physicians and as a member of the surgical staff, to George T. Banker as chief of the internal medicine department, to James G. Enright as a member of the internal medicine department, to Isaac E. Gluckman as a member of the internal medicine department, to Nicholas W. Sivolella as a member of the internal medicine department, to Edward A. Murphy as head of the ophthalmologic department, to Jacob Piller as chief of orthopedic surgery, to Samuel Orloff as a member of the pathologic department, to William J. Donahue as a member of the psychiatric department and to Solomon J. Lurie as a member of the surgical staff.

NEW YORK

Speakers' Service.—A survey is now being conducted by the Medical Society of the State of New York to look into the possibility of setting up a speakers' service and to see how this may best be brought about. A member of the staff of the state society is conferring with officials of county societies to learn their present activities and future needs.

Research into Causes of Chronic Alcoholism.—Cornell University Medical School will undertake a five year research project into the causes of chronic alcoholism. It is being financed by funds from the Research Council on Problems of Alcohol and several distilling companies, together with sources of the school and hospital funds. The research is to be carried on under the direction of Dr. Oscar Diethelm, professor of psychiatry at Cornell and psychiatrist in chief at the hospital. The project is in effect a continuation of work that a research team at the hospital has been carrying on for the past five years.

Personal.—Fred Karush, Ph.D., Elmhurst, has been awarded a three year senior fellowship by the American Cancer Society for research at New York University College of Medicine under the direction of R. Keith Cannan, D.Sc., department of chemistry. Mr. Karush has been with the Du Pont Chemical Company for five years following his graduation from the University of Chicago in 1938.——Dr. Louis E. Marshall, Brooklyn, who was recently separated from the army with the rank of lieutenant colonel after five and a half years of service, has been appointed director of laboratories at the House of the Good Samaritan Hospital, Watertown, effective January 1.

State Aid for Health Program.—A new state health program began on January 1 under an increase of $8,000,000 in state aid to New York City in 1947 and an increase of $2,000,000 for up state communities, according to budget estimates of the state health department. The program was provided last spring by the state legislature for accelerating the control of tuberculosis, stimulating the establishment of more county health departments and improving city health services. The increase in state aid, it is reported, has already resulted in the establishment of four county health districts in addition to six previously established. The state will pay one half the cost, not to exceed $2.50 a day, of providing hospital care for tuberculosis patients and one half the cost of public health programs approved by municipal health departments. It is expected that equality of treatment on both a qualitative and quantitative basis will be established throughout the state as soon as minimum standards for hospital care are established.

New York City

New Center for Cerebral Palsy.—The Cerebral Palsy Treatment and Training Center, 150th Street and St. Nicholas Place, opened January 17, the first such center in the metropolitan area. Sponsored by the Pediatric Foundation, the center will have a staff of physicians and therapists who will examine and treat cases and seek their causes. This establishment follows studies by the State Joint Legislative Committee on Cerebral Palsy.

Home Care for Cancer Patients.—Montefiore Hospital has instituted a project to test whether advanced cancer patients can be allowed to remain at home and at the same time be provided with the equivalent of hospital care. Patients will be provided with several visits a week by doctors from the hospital staff, daily nursing care by a visiting nurse, transportation to and from the dispensary and help with housework when necessary. The New York City Cancer Committee has given $30,000 in aid. It is estimated that home care will be one-third to one-half the cost of comparable care in the hospital. Dr. Ephraim M. Bluestone is director of the hospital.

Celebrate One Hundred and Twenty-Fifth Anniversary.—The Medical Society of the County of Kings and Academy of Medicine of Brooklyn will be 125 years old during 1947. The society began the celebration of the anniversary at a dinner honoring Dr. Thurman B. Givan, retiring president, at the Hotel St. George, Brooklyn, January 29. Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, spoke, as well as other medical and civic leaders. The society was organized in 1822 at a meeting in the home of Dr. Adrian Vanderveer in Flatbush. It established in 1844 now the oldest public medical library in the country and the only public medical library on Long Island, and built its own building in 1900.

Personal.—Dr. Edward C. Reifenstein Jr., formerly Harvard Medical School research fellow at the Massachusetts General Hospital, Boston, has been appointed research consultant to the Sloan-Kettering Institute for Cancer Research at the Memorial Hospital Cancer Center and also clinical research consultant to Ayerst, McKenna and Harrison, Ltd. He will carry on clinical research on the relation of glandular disturbances of cancer. ——Dr. I. Newton Kugelmass has been appointed consultant nutritionist to the department of health and the department of hospitals, New York City.——Dr. Aaron Edwin Margulis has been appointed professor of bacteriology and director of the hospital and dispensary services of bacteriology in the New York Post-Graduate Medical School and Hospital, Columbia University, to succeed Dr. Ward J. MacNeal, deceased.

NORTH CAROLINA

Appointments at University of North Carolina.—The following professors have been added to the faculty of the University of North Carolina School of Medicine: Dr. Kenneth M. Brinkhous, formerly of the State University of Iowa College of Medicine, Iowa City; Dr. John B. Graham, instructor of pathology and resident of Cornell Medical Center, New York; Dr. William S. Randall, instructor in pathology and director of the pathological laboratory at Watts Hospital, Durham, N. C., and former chief of the laboratory, Walter Reed General Hospital, Washington, D. C.; Arthur V. Jensen, Ph.D., assistant professor of anatomy in charge of neuroanatomy, former research assistant at the Institute of Neurology, Northwestern University School of Medicine, Chicago; Fred L. Rights, assistant professor of bacteriology, formerly of the department of bacteriology, Columbia University College of Physicians and Surgeons; Dr. Frederick A. Blount, Pensacola, Fla., instructor in pharma-

cology, graduate of the University of Pennsylvania School of Medicine, Philadelphia, and Dr. John B. Riggsbee, instructor in anatomy, graduate of Vanderbilt University School of Medicine, Nashville, Tenn.

OHIO

Cleveland Diabetes Society.—At a meeting Dec. 9, 1946 the Cleveland Diabetes Society was formed under the leadership of Drs. Henry J. John, president, and Max Miller, secretary-treasurer. The society is patterned after the societies in New York and Philadelphia, and affiliation with the national association is planned.

Kelleys Island Needs a Doctor.—A house, office and $3,000 a year plus fees is being offered by the village of Kelleys Island to a physician who will practice in that community of some 500 residents located in Lake Erie not far from Sandusky. Following the disruption of telephone communications some time ago as the result of broken cables, emergency radio communication was established with the mainland. The Toledo *Blade* of January 3 stated that Kelleys Island was still without "an emergency doctor" despite appeals to various state organizations.

Aid to Preventive Medicine Department.—A $70,000 grant from the Cleveland Foundation has been made to Western Reserve University to aid in the operation of the Elisabeth Severance Prentiss department of preventive medicine. Of the total, $25,000 is to be paid immediately and the remainder in the amount of $15,000 a year for the next three years. The department of preventive medicine was created in 1945 by a gift of $606,000 from the estate of the late Mrs. Elisabeth Severance Prentiss, Cleveland. In addition to laying plans for cooperation with the community in a program of preventive medicine, the department is organizing and equiping a large laboratory to carry on research in infectious diseases. Hundreds of specimens of viruses and cultures obtained by the staff members while in military service will be available for experimental work.

PENNSYLVANIA

Rheumatic Heart Clinics Established.—The fifth Rheumatic Heart Clinic established in 1946 by the Pennsylvania Department of Health was opened recently in the Harrisburg Polyclinic Hospital. Its purpose is to register all patients under the age of 21 in Harrisburg and vicinity who are afflicted with rheumatic fever or rheumatic heart disease in order to develop an organized plan for diagnosis and treatment. Dr. Allen W. Cowley, Harrisburg, is director of the new clinic. The other four clinics are located in Altoona, Erie, Allentown and Williamsport.

UTAH

Western Society for Clinical Research.—At a recent meeting in San Francisco a new scientific medical society was launched with the purpose of providing annual meetings and discussions for investigators in clinical medicine and its allied fields. The meetings of this Western Society for Clinical Research are to fill the needs for scientific interchange of the West in a manner similar to those of the Central Society for Clinical Research in the Middle West and the Society for Clinical Investigation in the East. Two of the six counselors who were elected at the San Francisco meeting are members of the University of Utah School of Medicine, Salt Lake City: Drs. Charles E. McLennan, professor and head of the department of obstetrics and gynecology, and Hans H. Hecht, assistant professor, department of medicine. Dr. B. Valdemar Jager of the department of medicine reported on his study of the treatment and metabolic changes of certain types of arthritis, and Dr. Hecht presented the results of his and his associates' work on a new agent employed in the diagnosis and treatment of cardiovascular diseases.

WASHINGTON

University Organizes Clinical Departments.—Organization of clinical departments in the new University of Washington School of Medicine, Seattle, is being conducted by Dr. Edward L. Turner, dean. Dr. Henry N. Harkins, associate professor of surgery, has been appointed professor of surgery and executive officer of the department. It is anticipated that Dr. Harkins will assume his new duties about July 1. Others appointed as clinical professors of medicine are Drs. Edwin George Bannick, now chief of staff, Swedish Hospital, Seattle; Edwin S. Bennett, associate clinical professor, University of Southern California School of Medicine; Byron F. Francis, former medical director of Riverton Hospital for Chest Diseases, Seattle; Lester J. Palmer, member of the staff of Virginia Mason Hospital, Seattle, and Charles Edward Watts, consultant in medicine at the U. S. Marine Hospital, Seattle. Roscoe L. Pullen, formerly of Tulane University, New Orleans, has been appointed associate professor of medicine and director of hospital planning.

ALASKA

Personal.—Dr. Elaine A. Schwinge, Georgetown, S. C., has been appointed junior field physician for the Territorial Department of Health of Alaska.——The territorial health department has announced the resignation of Dr. N. Berneta Block, Juneau, as director of the division of maternal and child health and crippled children's services.

Sitka to Get New Orthopedic Hospital.—Approval has been granted by the Office of Indian Affairs, Washington, D. C., for a 50 bed orthopedic hospital at Sitka. A plan has been worked out for development of orthopedic facilities in the territory on a cooperative basis using the navy dispensary on Japanski Island at Sitka for facilities. Administration of the staff for the new hospital will be under the Alaska Native Service, and the hospital equipment and supplies will be installed and used on a loan basis from the territorial department of health, which will also supply technical personnel for the treatment of orthopedic cases on a consultant basis. Dr. C. Earl Albrecht, Juneau, health commissioner of Alaska, said 400 orthopedic cases, three fourths of them Indian, Eskimo and Aleut children, are now on the territorial roster.

PUERTO RICO

Laboratory to Make Vaccines.—The chief of the Bureau of Public Health of the Health Department of Puerto Rico, Dr. Oscar Costa-Mandry, announces that a new public health laboratory will be established near San Juan for the manufacture of vaccines and other products used by the department of public health. Dr. Costa-Mandry recently returned from the United States, where he made a survey of leading public health laboratories.

Membership in the Blue Cross.—More than 8,000 Puerto Ricans enrolled under the Blue Cross Hospitalization Plan on the island during the third quarter of 1946, according to official reports, bringing the total membership to 31,215 men and women eligible for Blue Cross benefits. A sharp increase in membership registered during the final quarter was the result of legislation which went into effect authorizing the government of Puerto Rico to appropriate funds to extend Blue Cross benefits to all government employees.

Proposed Hospital Program.—The Planning Board of Puerto Rico in its 1947-1952 financial program recommends to the governor and the legislature a vast plan for the construction of new hospitals and improvements to existing hospitals. According to Public Law No. 725 passed by the 79th United States Congress, Puerto Rico is included in the federal aid program for construction and enlargement of private and government hospitals. Under this legislation Puerto Rico will receive an allocation of funds amounting to $12,150,000 during the next five years. However, the insular government and private interests running nonprofit institutions will have to contribute two dollars for each dollar contributed by the federal government. The planning board estimates that private institutions will use about 30 per cent of the federal funds. Therefore it recommends an overall allocation of insular funds amounting to $16,750,000 for the next six years, out of which $5,553,000 is already allocated by different enabling acts passed by the insular legislature during the past two years. If this comprehensive program is approved by the governor and the insular legislature during its session in February, the following benefits accrue to the people of Puerto Rico: 1. The bed capacity for general hospitals will be increased 50 per cent, which will thus provide 3.6 beds per thousand inhabitants by the year 1953. 2. The bed capacity of the insular charity hospitals, or district hospitals, would be increased 75 per cent, and the recommended policy of 1 bed for each thousand inhabitants would be reached for each municipality on the island. Puerto Rico has 77 municipalities and a population now of over 2,100,000 inhabitants. 3. The number of beds available in all the tuberculosis hospitals on the island would be doubled, and the goal fixed by the insular department of health of 1 bed in each tuberculosis hospital for each death due to this disease would be reached. 4. The hospital facilities for mental and nervous diseases would be increased 75 per cent. The overcrowded situation has brought serious problems to these hospitals in Puerto Rico.

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GENERAL

American College of Radiology.—The American College of Radiology and the Philadelphia Roentgen Ray Society will conduct a postgraduate course in radiology March 3 through April 4 in Philadelphia. Some of the subjects to be studied are certain neoplastic and inflammatory diseases, carcinoma of the head and neck, dosage calculation and tumor sensitivity in radiation therapy, carcinoma of the breast, blood and hemopoietic diseases, carcinoma of the genital and urinary tract and malignant and nonmalignant diseases of the skin.

Positions Open for Research in Psychiatry.—Twelve positions for research in psychiatry and related fields at the Western State Psychiatric Institute and Clinic have been established. The institute is a teaching and research hospital of the Pennsylvania mental hospital system, training psychiatrists, social workers, psychologists, nurses, occupational therapists and others for hospital and private fields. For further information write Dr. Grosvenor B. Pearson, O'Hara and DeSoto streets, Pittsburgh 13.

Electroencephalographers to Meet in Montreal.—The Eastern Association of Electroencephalographers (THE JOURNAL, January 11, p. 117) will hold a meeting February 21-23 in the Montreal Neurological Institute, Montreal. At the first afternoon scientific session Dr. Derek E. Denny-Brown, Boston, will review the fundamental principles in electromyography. Saturday, February 22, Dr. Herbert Jasper, Westmount, Que., will introduce a seminar discussion on "Technics, Terminology and Electroencephalographers."

Pharmaceutical Manufacturers' Award.—The Mayo Foundation for Medicine, Education and Research at the University of Minnesota lately received the annual award of the American Pharmaceutical Manufacturers Association for its contributions to public health through fundamental research in medical sciences. Isaiah Bowman, Ph.D., president of Johns Hopkins University, presented the parchment scroll to Dr. Donald C. Balfour, director of the foundation. The award, made annually on the recommendation of a scientific advisory board, was won last year by the Rockefeller Foundation.

Interne and Medical Students' Convention.—The twelfth annual convention of the Association of Internes and Medical Students met in Philadelphia, December 27-29. Among the speakers were Dr. Isaac Starr, dean, University of Pennsylvania School of Medicine; Dr. Pascal F. Lucchesi, director, Philadelphia General Hospital; Dr. I. S. Ravdin, professor of surgery, University of Pennsylvania School of Medicine; Dr. Edward Weiss, professor of clinical medicine, Temple University School of Medicine; Dr. Stuart Mudd, professor of bacteriology, University of Pennsylvania School of Medicine, and Dr. Milton Roemer, U. S. Public Health Service, Washington, D. C.

National Conference on Medical Service.—The twentieth annual meeting of the National Conference on Medical Service will open at the Palmer House, Chicago, Sunday, February 9, with registration at 9 o'clock.

9: 30 Call to order and address of the president, Dr. Cleon A. Nafe, Indianapolis.
9: 50 Dr. Joseph S. Lawrence, Washington, D. C., The Eightieth Congress.
10: 10 Dr. Herman E. Hilleboe, U. S. Public Health Service, Washington, D. C., The Operation of Public Law 725: The National Hospital Construction Act.
10: 40 Discussion.
11: 00 Dr. Paul B. Magnuson, Veterans Administration, Washington, D. C., Veterans' Care: Where Do We Go From Here?
11: 30 L. S. Kleinschmidt, Chicago, Medical Cooperatives.
11: 50 Thomas A. Hendricks, Chicago, Developments in the Council on Medical Service.
12: 15 Luncheon—Speaker to be announced.
2: 15 Open Forum: Moderator, Dr. Creighton Barker, New Haven, Conn.; speakers, Drs. Duncan W. Clark, associate dean, Long Island College of Medicine; Byrl R. Kirklin, secretary, Advisory Board for Medical Specialties, Rochester, Minn.; Leo G. Christian, vice chief of staff, St. Lawrence Hospital, Lansing, Mich.; Thomas P. Murdock, chief of staff, Meriden Hospital, Meriden, Conn.; subject, Modern Influences in Medical Practice: Undergraduate Medical Education; Trends Toward Specialization; General Practitioners in Hospitals; Hospital Staff Organization.

Lasker Awards in Planned Parenthood.—The third Annual Lasker Awards of the Planned Parenthood Federation of America were presented to Drs. Alan F. Guttmacher, Baltimore, and Abraham Stone, New York, January 25. The award, a medallion and $500, recognizes Dr. Stone's devotion of thirty years to clinical work, teaching and marriage counseling. He and his late wife gave New York City its first marriage counseling center, which has served as a model for those in other American communities. He also founded and edits the medical periodical devoted to this subject, *The Journal of Human Fertility*, and is director of the Margaret Sanger Research Bureau. Dr. Guttmacher received the award in recognition for his successful work in gaining the support of physicians, the clergy and educators. He is a graduate of Johns Hopkins School of Medicine, Baltimore, where he is now associate professor of obstetrics and gynecology, and the author of two books and co-editor with Dr. Stone. The 1946 winners of the awards were Drs. Robert L. Dickinson, New York, and Irl C. Riggin, Richmond, Va., health commissioner of the Virginia Department of Health.

American Board of Surgery.—At a meeting of the American Board of Surgery in Philadelphia Dec. 13-14, 1946, the following resolution was adopted:

The organization of the American Board of Surgery was completed on Jan. 9, 1937. A plan of this organization had been carefully studied by a general committee representative of certain general and sectional surgical societies called together through the initiative of the American Surgical Association. As a result of the deliberations of this general committee a tentative plan of organization was adopted. This plan was reported to the cooperating surgical societies and was approved with the understanding that the board, when organized, would have the power to change or modify the proposed plan as it saw fit. This board has been created in accordance with the action of the Advisory Board for Medical Specialties as approved by the Council on Medical Education and Hospitals of the American Medical Association, which has named certain specialty fields as being suitable to be represented by such boards. These boards have the twofold purpose of certifying those found to be qualified after meeting reasonable requirements and of improving existing opportunities for the training of specialists within the field concerned. This is to be done for the protection of the public and the good of the specialty.

The cooperating surgical societies selected jointly to form the board appointed their representatives as follows: American Surgical Association, 3; surgical section of the American Medical Association, 3; American College of Surgeons, 3; Southern Surgical Association, 1; Western Surgical Association, 1; Pacific Coast Surgical Association, 1; New England Surgical Society, 1; total, 13.

The term of membership is for six years. Each cooperating association has the appointing power of its representatives subject to the approval of the board. During the ten years in which the board has functioned, twenty-seven different surgeons have served full or partial terms of membership. The board has discharged its responsibilities by conducting examinations and has issued certificates of qualification to those surgeons who have met certain clearly specified educational requirements and have passed successfully its examinations. In discharging its responsibilities, the primary purpose of the board has been to establish and maintain a high standard in the education and training of the young surgeon. The American Board of Surgery is not concerned with measures that might gain special privileges of recognition for its certificants in the practice of surgery. It is neither the intent nor has it been the purpose of the board to define requirements for membership on the staffs of hospitals. The prime object of the board is to pass judgment on the education and training of broadly competent and responsible surgeons—not who shall or shall not perform surgical operations. The board specifically disclaims interest in or recognition of differential emoluments that may be based on certification.

CORRECTION

Schweizerische medizinische Wochenschrift.—The index and abstracts from the *Schweizerische medizinische Wochenschrift* appearing on page 141 of THE JOURNAL of January 11 were taken from the August 31 rather than the August 24 issue of that publication.

Marriages

BRUNO J. ROMEO, Jackson Heights, N. Y., to Miss Evelyn Cordell of Asheville, N. C., and Washington, D. C., June 22.

THADDEUS A. NIGBOROWICZ, Gallitzin, Pa., to Miss Blanche Elizabeth Romerowicz of Altoona July 14.

HUGH LEWIS WILLIAMS, Martinsville, Ind., to Miss Marian Mead Reynolds of Scio, N. Y., July 27.

DAVID B. KAGAN, Pittsfield, Mass., to Miss Irene Sylvia Besdin of Syracuse, N. Y., in August.

HOWARD LAMAR HOLLEY, Marion, Ala., to Mrs. Martha H. Gross of Birmingham in September.

CARROLL H. SMITH JR., La Mesa, Calif., to DR. MARGARET STEBBINS of Pittsburgh July 27.

ROBERT M. HOYNE, Urbana, Ill., to Miss Avonne Andrews of Champaign July 26.

MILTON M. COPLAN, Miami, Fla., to Miss Mildred Elizabeth Hunt July 14.

Deaths

John Staige Davis ✦ widely known plastic surgeon died at his home in Baltimore, Dec. 23, 1946, aged 74. Dr. Davis was born in Norfolk, Va., Jan. 15, 1872. After graduating at St. Paul's School, Garden City, L. I., he entered the Sheffield Scientific School at Yale University for premedical work under Professor Russell H. Chittenden, graduating in 1895. At Yale he was captain of the Sheffield Military Company and an editor of the *Yale Scientific Monthly*. He then went to Johns Hopkins University Medical School, Baltimore, graduating in 1899, and became a resident house officer in Johns Hopkins Hospital, serving under Drs. Osler, Halsted and Kelly. Later he was resident surgeon at Union Memorial Infirmary under Dr. J. M. T. Finney for three years.

At the completion of his hospital service Dr. Davis began private practice and was connected with the surgical dispensary of Johns Hopkins Hospital and with the Robert Garrett Children's Hospital. In 1908 he limited his practice to surgery, with particular attention to the then undeveloped field of plastic surgery. He is said to have been the first surgeon in the United States to specialize in general plastic surgery. Since 1923 he had been associate professor of surgery (plastic) at his alma mater, where in June 1946, after relinquishing some of his more arduous duties, he had been named associate professor of surgery emeritus. He had been instructor in anatomy and in operative surgery at the College of Physicians and Surgeons in Baltimore and professor of surgery at the Woman's Medical College of Baltimore. He was a founder member of the American Board of Plastic Surgery (chairman at the time of his death), the American College of Surgeons and the American Board of Surgery.

Dr. Davis served as vice president of the American Surgical Association and president of the American Association of Plastic Surgeons, the Southern Surgical Association and the American Association of Plastic Surgeons. He was a member of the Interurban Surgical Association, Surgical Research Society, American Association for the Surgery of Trauma, American Association of Reconstructive and Plastic Surgeons, the Southern Medical Association and others. During World War I he was a captain in the medical corps of the U. S. Army and was on duty in Baltimore as chairman of the examining board of the Medical, Sanitary and Veterinary Corps of Maryland. During World War II he was a member of the Plastic and Maxillofacial Surgery Committee of the Medical Section of the National Research Council, consultant to the Secretary of War and consultant in plastic surgery to the surgeon general.

Dr. Davis was visiting plastic surgeon at the Johns Hopkins Hospital, the Union Memorial Hospital, the Hospital for Women of Maryland and the Children's Hospital School. For about ten years he carried out research problems in the Hunterian Laboratory of Experimental Surgery and published articles dealing with these investigations. Dr. Davis was the author of "Plastic Surgery, Its Principles and Practice" and numerous articles in the field of plastic surgery. He was a member of the Maryland Club, Bachelors Cotillon, Yale Club of New York, Military Order of the World War, Sons of the American Revolution and the Maryland Historical Society.

William Hale ✦ Utica, N. Y.; born in Gananoque, Ont., Canada, in 1886; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1910; president of the Medical Society of the State of New York; past president and secretary of the Oneida County Medical Society; fellow of the American College of Surgeons; member of the House of Delegates of the American Medical Association, 1944-1945; a charter member of the Utica Academy of Medicine; commissioned in the British army and attached to a hospital reinforcement group during World War I, serving overseas, winning the British Military Cross; organized preschool clinics for the Child Welfare Department of Utica and helped bring about the merger of the Utica Visiting Nurse Association and the Child Welfare Association, serving the joint organization as medical director for four years; consulting surgeon at Utica State Hospital; served as president and as surgeon of the staff of the Faxton Hospital; for twenty years surgeon to the New York Central Railroad Company, Delaware, Lackawanna & Western Railroad Company and the New York, Ontario & Western Railroad Company; found dead in a parking lot at the rear of his office, January 16, aged 60, of heart disease.

Philip Arzt Kees ✦ West Springfield, Mass.; University of Minnesota Medical School, Minneapolis, 1936; received master of science degree in surgery from the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, Philadelphia; interned at the Los Angeles County Hospital in Los Angeles; served a residency at the William W. Backus Hospital in Norwich, Conn.; diplomate of the National Board of Medical Examiners; fellow of the Springfield Academy of Medicine; began active duty as a captain in the medical corps, Army of the United States, on March 1, 1942; service terminated with the rank of major in February 1946; chief of surgery at army air base hospitals, orthopedic surgeon of an evacuation hospital and operating surgeon of a paratroop combat team (11th Airborne) in the Pacific; wounded three times; decorated with the Purple Heart, Bronze Star for valor and the Silver Star for gallantry in action; on the staffs of the Mercy and Wesson hospitals; died Nov. 4, 1946, aged 38, of a skull fracture received in an automobile accident.

Carl Clifton Garver ✦ Commander, M. C., U. S. Navy, Atlanta, Ga.; Emory University School of Medicine, Atlanta, 1932; formerly an intern and chief resident surgeon at the Grady Hospital; served as chief surgeon for the Georgia Power Company; commissioned a lieutenant in the medical corps of the U. S. Naval Reserve; began active duty in February 1941; promoted to lieutenant commander and commander; transferred to regular navy; after recruiting duty in Macon went to sea aboard the U. S. S. *Atlanta* and survived the sinking of the vessel in sea action off Guadalcanal; saw duty aboard five other ships before returning to the United States; received a letter of commendation from Admiral William Halsey for zealous performance of duty under severe combat conditions; drowned Sept. 10, 1946, aged 43, when he apparently fell from his private boat en route from Parris Island, S. C., to Jacksonville, Fla.

Charles Marshall Davison ✦ Chicago; born on April 16, 1896; University of Illinois College of Medicine, Chicago, 1920; at one time assistant and associate in surgery at his alma mater; associate professor of surgery at the Northwestern University Medical School, where he had been assistant professor of surgery; professor of surgery at the Cook County Graduate School of Medicine; member of the Western Surgical Association and of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; attending surgeon and medical director of the University Hospital, where he served an internship; chairman of the department of surgery, formerly an intern and from Dec. 1, 1939 to May 16, 1943 medical director of the Cook County Hospital, where he had joined the surgical staff in 1926; died Dec. 16, 1946, aged 50, of coronary disease.

Carl Marion Sautter, New York; Indiana University School of Medicine, Indianapolis, 1911; specialist certified by the American Board of Otolaryngology; formerly clinical professor of rhinology and laryngology at the New York Polyclinic Medical School and Hospital; member of the American Laryngological, Rhinological and Otological Society; served during World War I; on the staffs of the Lawrence Hospital in Bronxville, New York Orthopedic Dispensary and Hospital, St. Luke's Hospital and the Misericordia Hospital; died Nov. 3, 1946, aged 59, of carcinoma of the prostate.

Edward C. Leverett Adams ✦ Columbia, S. C.; Maryland Medical College, Baltimore, 1903; Medical College of South Carolina, Charleston, 1904; served during the Spanish-American War and in France during World War I; died Nov. 1, 1946, aged 70, of cirrhosis of the liver.

Mordecai Lee Barefoot, Dunn, N. C.; University of Maryland School of Medicine, Baltimore, 1911; died Nov. 27, 1946, aged 64, of diabetes mellitus and chronic nephritis.

Charles P. Bartley, Excelsior Springs, Mo. (licensed in Missouri in 1900); died Oct. 14, 1946, aged 79.

Louis De Keyser Belden ✦ Indianapolis; Johns Hopkins University School of Medicine, Baltimore, 1915; interned at the Roosevelt and Bellevue hospitals in New York; a medical officer during World War I; on the staffs of St. Vincent's and City hospitals; died Nov. 28, 1946, aged 57, of coronary thrombosis.

Clarence Conrad Bosselmann, Plymouth, Ind.; Indiana University School of Medicine, Indianapolis, 1935; member of the American Medical Association; interned at the Lutheran Hospital; served as county coroner and in the U. S. Navy during World War II; on the staff of the Parkview Hospital; died Nov. 7, 1946, aged 36.

Norbert Odeon Bourque, Chicago; National Medical University, Chicago, 1904; University of Nashville (Tenn.) Medical Department, 1907; Université de Lausanne Faculté de Médecine, Switzerland, 1923; on the staff of the Mother Cabrini Hospital, where he died Nov. 23, 1946, aged 69, of auricular fibrillation and coronary sclerosis.

Albert Fessenden Bronson ✠ De Land, Fla.; Bellevue Hospital Medical College, New York, 1885; member of the Medical Society of the State of Pennsylvania; died Dec. 10, 1946, aged 86, of arteriosclerosis.

William Edward Butt, Viroqua, Wis.; Chicago Homeopathic Medical College, 1895; died Nov. 20, 1946, aged 76, of myocarditis.

John Dennis Carr, Whitfield, Miss.; Jefferson Medical College of Philadelphia, 1896; member of the American Medical Association; served overseas during World War I and on the medical staffs of Kansas, Arizona and Mississippi State hospitals; formerly superintendent of North Dakota State Hospital in Jamestown; died Nov. 29, 1946, aged 74, of coronary thrombosis.

Edward Wight Clarke ✠ Hastings-on-Hudson, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1919; past president of the Bergen (N. J.) County Medical Society; on the staff of the Englewood (N. J.) Hospital; died in the Columbia-Presbyterian Medical Center in New York, Nov. 19, 1946, aged 54.

Henry Little Clarke, Brewster, Mass.; Boston University School of Medicine, 1884; died in Boston Nov. 17, 1946, aged 87, of arteriosclerosis and fracture of the left femur.

Vincent Jacob Cohenour ✠ Joliet, Ill.; Northwestern University Medical School, Chicago, 1901; served during the Spanish-American War and as county physician; died Nov. 27, 1946, aged 73, of uremia.

James A. Cravens, Greenfield, Ill.; Washington University School of Medicine, St. Louis, 1896; for many years on the staff of the Jacksonville (Ill.) State Hospital; died at Our Saviour's Hospital, Jacksonville, Nov. 30, 1946, aged 74, of coronary thrombosis.

John B. Davis, Ottawa, Kan.; Medical College of Ohio, Cincinnati, 1894; died Oct. 2, 1946, aged 77, of coronary thrombosis.

Frank Herbert Deane, Berwyn, Ill.; Dearborn Medical College, Chicago, 1906; for many years on the board of health; served overseas during World War I; examiner for the Selective Service Board and awarded a presidential citation for special services rendered during World War II; died Nov. 20, 1946, aged 77, of coronary disease.

William G. Doern, Daytona Beach, Fla.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902; member of the American Medical Association; professor of anatomy at the Milwaukee Medical College; Spanish-American War veteran; medical examiner of recruits in Milwaukee during World War I; died in Milwaukee Nov. 3, 1946, aged 68, of heart disease.

Joseph Donohoo, Tulsa, Okla.; University of Nashville (Tenn.) Medical Department, 1892; died in a local hospital Nov. 1, 1946, aged 77, of hypertensive heart disease.

David G. Elder, Chickamauga, Ga.; Atlanta Medical College, 1886; member of the American Medical Association; died recently, aged 82.

George William Farrar, Fall River, Kan.; University Medical College of Kansas City, Mo., 1895; died in St. Francis Hospital, Wichita, Oct. 20, 1946, aged 76.

Frank W. Foster, Hannibal, Mo.; Louisville (Ky.) Medical College, 1894; died Oct. 13, 1946, aged 74.

Broox Cleveland Garrett ✠ Shreveport, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1913; served during World War I; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; past president of the Shreveport Medical Society; member of the board of Caddo-Shreveport Health Unit; member staff, which he served as president, of Schumpert Sanitarium; on the visiting staff of Charity Hospital; died Nov. 15, 1946, aged 58.

Albert Alexander Gebhardt, St. Louis; St. Louis College of Physicians and Surgeons, 1909; served during World War I; found dead Nov. 12, 1946, aged 73.

Mark Albert Glaser ✠ Los Angeles; University of California Medical School, San Francisco, 1923; interned at San Francisco County Hospital; member of the Los Angeles Neurological Society, Hollywood Academy of Medicine, Western Association of Industrial Physicians and Surgeons and the American Association of Industrial Physicians and Surgeons; on the staffs of Kern General Hospital, Bakersfield, Hollywood, Methodist and Cedar of Lebanon hospitals; died in Salt Lake City Nov. 2, 1946, aged 49.

George W. Goss, Los Angeles; Saginaw (Mich.) Valley Medical College, 1899; died Nov. 4, 1946, aged 76.

John L. Hadley, Oil City, Pa.; Cleveland Medical College, Homeopathic, 1897; member of the American Medical Association; past president of the Venango County Medical Society; member of the board of directors of the Standard Life Insurance Company of America; formerly member of the city board of health; served as vice president and member of the staff of the Oil City General Hospital, where he died Nov. 13, 1946, aged 81, of cardiorenal vascular disease.

John Kennedy Hanna, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1884; died in the Butterworth Hospital Nov. 19, 1946, aged 88, of carcinoma of the prostate and injuries received in a fall.

Charles D. Harrington ✠ Wayzata, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1895; died Nov. 18, 1946, aged 76, of carcinoma of the lung.

Caleb Wooster Harris, Bishopville, S. C.; University of Nashville (Tenn.) Medical Department, 1894; Vanderbilt University School of Medicine, Nashville, 1894; served in the state legislature from Lee County from 1907 to 1911; died Oct. 20, 1946, aged 75.

Martin Hassenmiller, West Baden Springs, Ind.; Louisville (Ky.) Medical College, 1901; member of the American Medical Association; past president of the West Baden National Bank; died in Louisville, Ky., Nov. 18, 1946, aged 77, of cerebral hemorrhage.

Ira H. Hawes, Arcanum, Ohio; Medical College of Ohio, Cincinnati, 1893; member of the American Medical Association; on the staff of Wayne Hospital in Greenville; died Nov. 27, 1946, aged 79, of cerebral hemorrhage.

Edgar Marion Hazlett, Washington, Pa.; Jefferson Medical College of Philadelphia, 1902; member of the American Medical Association; for many years president and on the board of the Washington County Tuberculosis Association; member of the local Civil Service Board and board of health; on the staff of the Washington Hospital, where he died Nov. 8, 1946, aged 76, of cerebral hemorrhage.

Charles Martin Hutchinson, Cambridge, Mass.; Dartmouth Medical School, Hanover, N. H., 1894; member of the American Medical Association; school physician; on the staff of the Cambridge Hospital, where he died Nov. 26, 1946, aged 76, of paralytic ileus following an operation for carcinoma of the sigmoid.

Stella Elora Chapman Jacobi, Omaha; University of Michigan Homeopathic Medical School, Ann Arbor, 1885; died Nov. 12, 1946, aged 87, of cerebral hemorrhage.

Norman Gilchrist James, Hayneville, Ala.; Medical College of Alabama, Mobile, 1898; member of the American Medical Association; died Nov. 19, 1946, aged 72, of Hodgkin's disease.

Simeon Lambright, Danville, Ill.; National Normal University College of Medicine, Lebanon, Ohio, 1892; member of the American Medical Association; died in Mishawaka, Ind., Nov. 9, 1946, aged 83, of cardiovascular disease.

Mial R. Lyman, Bad Axe, Mich.; Eclectic Medical Institute, Cincinnati, 1883; died Nov. 2, 1946, aged 90.

James Riley McCollum, St. Marys, W. Va.; College of Physicians and Surgeons, Baltimore, 1900; member of the American Medical Association; honorary member of the Academy of Medicine of Parkersburg and the West Virginia State Medical Association; formerly member of the West Virginia House of Delegates; in September 1946 was unanimously named as the "Good, Good Neighbor of Pleasants County"; died Nov. 15, 1946, aged 72, of coronary occlusion.

Edward Aloysius McCullough, Meriden, Conn.; Harvard Medical School, Boston, 1894; served during the Spanish-American War; died in the Meriden Hospital Nov. 24, 1946, aged 78, of heart disease.

Royal Albert McCune ✠ Surgeon Lieutenant Commander, U. S. Navy, retired, Central Valley, N. Y.; University and Bellevue Hospital Medical College, New York, 1904; U. S. Naval Medical School, 1928; entered the U. S. Navy in December 1920 and retired on Feb. 1, 1941 on attaining the statutory retirement age; died in Watertown, Mass., Nov. 23, 1946, aged 69, of carcinoma of the larynx.

Joseph John Manley, Cleveland; St. Louis University School of Medicine, 1929; interned at St. Alexis Hospital in Cleveland, where he was resident physician at the Charity Hospital; began active duty as a captain in the medical corps, Army of the United States, in October 1942 and service terminated in August 1943; died in the U. S. Marine Hospital recently, aged 46, of arteriosclerotic heart disease.

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Henry B. Mehrmann, Oakland, Calif.; California Medical College, Oakland, 1885; member of the American Medical Association and the Alameda County Sanity Commission; served as county coroner and as Alameda County Public Administrator; died in the Merritt Hospital Nov. 4, 1946, aged 82, of arteriosclerotic heart disease.

Lewis Franklin Mobley ✠ Summitville, Ind.; Medical College of Indiana, Indianapolis, 1902; served overseas during World War I; on the staff of St. John's Hospital in Anderson; died in the Ball Memorial Hospital, Muncie, Nov. 8, 1946, aged 71, of cerebral hemorrhage.

George Wilson Montgomery, Louin, Miss.; University of Mississippi School of Medicine, University, 1910; served during World War I; died Nov. 27, 1946, aged 69, of cerebral hemorrhage.

West Montgomery, Mentor, Ohio; Starling Medical College, Columbus, 1885; past president, vice president and secretary-treasurer of the Lake County Medical Society; justice of the peace; served as mayor of Ada; on the staff of the Lake County Memorial Hospital in Painesville; died recently, aged 88, of cerebral thrombosis.

Henry Paul Murphy, Philadelphia; Medico-Chirurgical College of Philadelphia, 1905; died Nov. 9, 1946, aged 67, of heart disease.

Harry Manlove Nutter, Philadelphia; Baltimore University School of Medicine, 1903; for many years on the staff of the Jefferson Hospital; died in Oaklyn, N. J., Nov. 12, 1946, aged 71, of coronary thrombosis.

Benjamin Stuart Paschall, Seattle; University of Pennsylvania Department of Medicine, Philadelphia, 1903; died Nov. 22, 1946, aged 67.

James M. Pedicord, Zanesville, Ohio; Ohio Medical University, Columbus, 1893; served as county coroner; formerly on the staffs of the Good Samaritan and Bethesda hospitals; died recently, aged 78, of cardiac decompensation.

Benjamin Anthony Pizzuto, Jersey City, N. J.; Georgetown University School of Medicine, Washington, D. C., 1938; interned at St. Francis Hospital in Jersey City and New York; served during World War II; died recently, aged 33.

Ernest Otto Pucklitsch, Cincinnati; Miami Medical College, Cincinnati, 1894; died Nov. 2, 1946, aged 77, of coronary occlusion.

Jack Roy Tayman Rafter ✠ Berkeley Springs, W. Va.; Medical College of Virginia, Richmond, 1940; member of the Kentucky State Medical Association; interned at the Good Samaritan Hospital in Lexington, Ky., where he had been resident physician at the University of Kentucky from 1941 to 1943, when he became affiliated with the Fuller-Gilliam Hospital in Mayfield, serving until 1945; died in an automobile accident Oct. 22, 1946, aged 32.

CAPT. WILBERT W. BUCKHOLD
M. C., A. U. S., 1907-1944

Leonard Sigmund Rau, New York; Bellevue Hospital Medical College, New York, 1885; fellow of the American College of Surgeons; served as police surgeon and health officer in Lawrence, N. Y.; for many years president of St. Joseph's Hospital in Far Rockaway, where he had been on the staff; served on the staffs of the Meadowbrook Hospital in Hempstead, N. Y., and the Nassau Hospital in Mineola, N. Y.; died Oct. 31, 1946, aged 82.

Joseph C. Reeder, Montezuma, Ind.; Eclectic Medical Institute, Cincinnati, 1886; died Nov. 28, 1946, aged 91, of uremia.

Frederick Knox Reynolds, Birmingham, Ala.; Birmingham Medical College, 1901; died Nov. 4, 1946, aged 75.

John I. Rinne Jr., Indianapolis; Indiana University School of Medicine, Indianapolis, 1936; member of the American Medical Association; interned at the Indianapolis City Hospital; interned at the New York Hospital in New York, where he served a residency; during World War II attained the rank of lieutenant commander, after three and one-half years in the U. S. Navy, including eighteen months overseas; killed in an automobile accident Nov. 9, 1946, aged 34.

David N. Robb, Ypsilanti, Mich.; Detroit College of Medicine and Surgery, 1930; member of the American Medical Association; interned at the City of Detroit Receiving Hospital; served as health officer of Ypsilanti and as county coroner; died Nov. 12, 1946, aged 48.

Joseph Rosenfeld, Youngstown, Ohio; Long Island College Hospital, Brooklyn, 1915; fellow of the American College of Physicians; during World War I served as a captain in Russia with an American ambulance corps and was decorated for bravery, receiving the French Croix de Guerre as well as the St. Ann's Cross from the provisional government of Archangel, Russia; died Nov. 4, 1946, aged 53, of tumor of the lung and pleura.

William John Garvey Salmon, Old Forge, Pa.; College of Physicians and Surgeons, Baltimore, 1908; member of the American Medical Association; deputy coroner of Lackawanna County; medical examiner in the schools of Old Forge; served as Selective Service examiner for Old Forge and Clarks Summit during World War II; one of the organizers of the Miners' and Merchants' Bank; died Nov. 18, 1946, aged 65.

Paul Francis Sarubbi, New York; Eclectic Medical College, Cincinnati, 1915; served as police surgeon; died in St. Vincent's Hospital Nov. 28, 1946, aged 56, of liposarcoma.

Otto Ransom Spigler ✠ Terre Haute, Ind.; Hospital College of Medicine, Louisville, 1902; served during World War I; fellow of the American College of Surgeons; on the staffs of St. Anthony's and Union hospitals; surgeon, St. Mary of the Woods School and Chicago, Milwaukee, St. Paul and Pacific Railway; vice president of the Terre Haute Savings Bank; died Nov. 28, 1946, aged 71, of coronory occlusion.

James Oscar Starr, Greenville, Ohio; Starling Medical College, Columbus, 1901; formerly vice president and secretary of the Darke County Medical Society; died in Dayton recently, aged 77, of arteriosclerosis.

John Joseph Thomas, Ansonia, Conn.; Fordham University School of Medicine, New York, 1921, member of the American Medical Association; interned at St. Catherine's Hospital in Brooklyn; on the staff of the Griffin Hospital in Derby, where he died Oct. 14, 1946, aged 49.

William Alonzo Tolson, Washington, D. C.; Howard University College of Medicine, Washington, 1906; died Nov. 29, 1946, aged 62, of carcinoma of the stomach.

Roscoe Samuel Van Pelt ✠ Los Angeles; Northwestern University Medical School, Chicago, 1909; died in Guadalajara, Mexico, Nov. 13, 1946, aged 65, of heart disease.

Charles Edwin Verdier, New Orleans; Hahnemann Medical College and Hospital of Philadelphia, 1904; medical director of the Public Health Institute, which he was instrumental in founding; major in the medical corps of the U. S. Army during World War I and later a major of the Louisiana National Guard; died Nov. 17, 1946, aged 63.

Joseph P. Walsh ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1895; served as a major in the medical corps of the U. S. Army during World War I; past president of the Pennsylvania Society for the Prevention of Tuberculosis; member of the American College of Chest Physicians; associated with the Henry Phipps Institute for Study, Treatment and Prevention of Tuberculosis, St. Agnes Hospital and White Haven (Pa.) Sanatorium; died Oct. 23, 1946, aged 75, of coronary sclerosis.

KILLED IN ACTION

Wilbert William Buckhold, Blackey, Ky.; University of Louisville School of Medicine, 1933; served as health director of Meade County; began active duty as a first lieutenant in the medical reserve corps of the U. S. Army in August 1940; promoted to captain; stationed at Fort Knox, Ky., till late in 1941, when he was transferred to the U. S. Army Sternberg General Hospital in Manila; believed to have been captured on Corregidor; killed in action in the South China Sea Oct. 24, 1944, aged 37, as the result of the sinking of a Japanese ship on which he was being transported while a prisoner of war.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 11, 1947.

Investigation of the Causation of Rheumatoid Arthritis

An attempt on a large scale to discover the cause of rheumatoid arthritis was announced by Lord Horder in presiding at the annual meeting of the Empire Rheumatism Council. On the recommendation of the scientific advisory committee the council has appointed two whole time registrars to investigate the factors in the causation of rheumatoid arthritis. It has been decided to begin with 100 token cases. If this preliminary piece of clinical research is promising, it is intended to investigate 1,000 cases. A carefully prepared questionnaire and case note has been produced by the committee, which will facilitate the revelation and correlation of new facts in connection with rheumatoid disease. This investigation has been in progress for about three months. From it the committee hopes that there will emerge the lines on which specific research should be undertaken. This is the first time that an attempt has been made by a uniform method of approach to discover the cause of rheumatoid arthritis—a disease of which, while being the most crippling, we know least. So far from 70 to 80 of the first 100 cases have been investigated in hospitals in or near London. An indication of the thorough nature of the investigation into each case is the fact it takes about four hours to fill in one questionnaire. When the first hundred token cases have been completed it is hoped, if sufficient funds are available, to appoint four more registrars to complete the investigation. It is estimated that it will take six months to complete the first hundred cases with an equal number of controls. The other cases, with their controls, will be drawn from other parts of the country, so that it can be seen whether the incidence of the disease is higher in one place than in another and whether local conditions affect it.

The Interference of Bureaucracy in Medical Work

If there is one thing more than another which the profession dreads in the working of the National Health Service it is bureaucratic interference. Some bad examples of this interference, though not in connection with the act, have recently come to light and are regarded as a foretaste of what to expect under the act. They have excited widespread condemnation in the profession and regret that they did not occur in time to be known to all voters in the plebiscite whether to negotiate or not with the government. It is maintained that many who voted "Yes" would have voted "No" if they had had such examples of interference before them. One bad example, the attempt of the Willesden Borough Council to force the doctors and nurses employed by it to join a trade union under penalty of dismissal, has been reported in a previous letter. An equally bad example is reported by a doctor in the current issue of the *British Medical Journal*. He had under care a patient suffering from carcinoma of the esophagus who was discharged from the hospital after gastrostomy had been performed, the growth having been found irremovable. The patient had lost over 12.6 Kg. in weight, and the hospital dietetic expert, in agreement with the consulting surgeon, decided that he should have 2 ounces (60 Gm.) of fat daily in the form of butter or margarine. As the dietetic restrictions of the war still continue, this could be obtained only by the sanction of the food authorities. A special form had to be filled in by the doctor giving full particulars of the patient's condition and the medical reasons for the extra ration. The local food officer granted the extra fat, but he had to report the matter to headquarters and a few days later received a reply stating that "our medical officers are of opinion that in cases of gastrostomy the important point is that the food chosen is such as will go through the gastrostomy tubes. In their opinion there is no need for extra butter in such cases, as there is no call for a lubricant." They offered instead a priority allowance of 2 pints (1,000 cc.) of milk and three eggs per week. The doctor then wrote to Dr. Edith Summerskill, parliamentary secretary to the Ministry of Food, because he felt that it was wrong to reduce his patient's fat ration, as he was only just holding his own in weight. He pointed out that the patient was not ordered butter as a lubricant for swallowing but as supplying extra fat, as considered necessary by the dietetic expert. Also the ministry had missed the point that the extra fat was necessary to maintain life. Dr. Summerskill replied, stating that the refusal was "strictly in accordance with the recommendation of our medical advisers," but "on compassionate grounds" an extra 2 ounces of butter weekly would be allowed. The doctor indignantly comments on describing thus what was necessary to maintain life. The patient did not live much longer. Such are the mistakes made by officialdom when it interferes with the work of the physician.

The Failure of Breast Feeding

One of the tragedies of our civilization is the failure of breast feeding. In the *Archives of Disease in Childhood* (**21**:1 [March] 1946) Harold Waller tries to determine why failure occurs in about half the mothers. The statistics of the Ministry of Health show that 80 per cent of the babies leaving maternity hospitals and 95 per cent of those born outside are wholly breast fed at the end of the first fortnight of life, yet three months later only 50 per cent are still breast fed. Primiparas contribute largely to the failures. Of 436 primiparas seen consecutively at infant welfare centers in East London 28 per cent at the end of one month, 38 per cent at the end of two months and 42 per cent at the end of three months had ceased to feed their children, giving as a reason only that "the milk left them." Waller gives two major reasons. The first is that the nipple is structurally defective, but he believes that this defect can be easily remedied by wearing a glass shield with a controlled opening, which is firmly supported over the breast so as to press the nipple through the opening. The second reason is that the breasts develop a high milk pressure and become hot and heavy and enlarged to perhaps twice their size. The skin is tightly stretched and glistening, and the veins are prominent. At the height of the engorgement milk cannot be obtained by the child, and only with difficulty is it removed artificially. The mother feels great discomfort and suckling damages the nipples and may lead to abscess of the breast.

The treatment in the extreme stage of engorgement is manual relief of the breast by the mother or nurse, who with thumb and finger compresses the lacteal sinuses. The excess of milk is given to the child. Waller's practice is to prevent this stage from developing by teaching all mothers to massage the breasts during the last stages of pregnancy so that if there is any trouble she can treat herself.

Cancer Research

At the annual meeting of the British Empire Cancer Campaign it was stated that a record income of $520,000 had been raised during the year. Investigation by the scientific advisory committee into the influence of viruses in the causation of cancer and a vast amount of work in the field of chemotherapy were proceeding. New methods of attack were also being developed by application of the most recent nuclear physics to treatment. A surgeon, Sir Stanford Cade, in moving the

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adoption of the report, said that the best yardstick by which to measure progress was mortality. Of cancer in accessible sites and in some internal organs it could be said that there was considerable decrease in mortality. Although in some sites, notably in the lung, the curve was still relentlessly on the upgrade, the rate for the lip, tongue, jaw, skin, breast and uterus was falling. It was undesirable to talk about cure, but Professor Dodds had given us a new weapon. The synthetic ovarian hormone diethylstilbestrol and its derivatives were potent in the clinical control of cancer of the prostate and possibly of other sites.

PARIS

(From Our Regular Correspondent)

Dec. 31, 1946.

The Paris Conference of the United Nations Educational, Scientific and Cultural Organization

In 1921 on the proposal of Léon Bourgeois (France) the Society of Nations appointed a commission, of which Henri Bergson was president, to examine international intellectual cooperation. In Paris the International Institute of Intellectual Cooperation, with which forty national commissions and numerous committees of experts collaborated, was created. In 1942 in London the Allied ministers for education met periodically to discuss the cultural reconstruction of occupied and devastated Europe. Then in 1945 in San Francisco the creation of a special organization was completed. On Nov. 1, 1945 UNESCO was organized in London and to its program were added sciences and information of the masses; forty-four nations signed the UNESCO convention.

The Paris Conference took place from Nov. 19 to Dec. 10, 1946. The French government put at the disposal of UNESCO the Majestic Hotel, former head office of the Paris gestapo. Forty-eight national delegations were present. The chief of the United States delegation was William Benton, under state secretary to the foreign office, with four delegates, five deputy delegates and thirty-three counselors. Other countries were represented by similar delegations. Seven nations of the United Nations Organization which have not signed the UNESCO charter, Russia, the Ukraine, Bielo-Russia, Costa Rica, Ethiopia, Honduras and Paraguay, did not send delegations.

PROGRAM, AIM AND WORKING METHOD

The secretary to the executive committee of UNESCO, Dr. Huxley, author of the book "UNESCO, Its Purpose and Its Philosophy," has indicated in his report to the conference the two main aims of UNESCO: first to contribute to peace and then to work for the happiness of humanity regardless of races, sexes, languages and religions, against every racism theory, by conforming oneself to the principle of equality, to guarantee to everybody full and equal access to education and the mutual respect between men and nations. An important task is reconstruction in the sphere of culture and science. One problem of prime importance in the direction of liquidating inequality is the fight against illiteracy. During 1947 a conference will establish throughout the world the ten UNESCO centers. They will partake of the same roof as the regional United Nations organizations for health, civil aviation, food and agriculture.

SUBCOMMISSION FOR NATURAL SCIENCES

The program of this subcommission has been prepared under the leadership of Joseph Needham, assistant professor of biochemistry at the Cambridge University and foreign professor of physiology at Stanford University. This subsection has been in communication with eighty-four international scientific organizations.

NATURAL SCIENCES PROGRAM

This program covers a wide range of projects, some of which are to be put into operation forthwith and others only to be studied and reported on to the next general conference.

FIELD TEAMS FOR THE STUDY OF NUTRITION

The highest priority was given to the important plan of establishing field teams for the study of nutrition problems, one in India (where already a small institute for researches on food is located at Coonor; it will also deal with the role of fish as food, which nourishes 60,000,000 of Bengalese), one in Hylean Amazon, one in China and later, when conditions permit, one in Africa. The aim of the field teams is to investigate all aspects of food production and utilization, deficiency diseases and other problems with the ultimate object of raising the standard of living for large masses of people in those great regions of the world now suffering from malnutrition.

OTHER NATURAL SCIENCE ACTIVITIES

Four field science cooperation offices will be set up in China, India, the Middle East and Latin America, staffed with scientific men engaged on every type of liaison work with the scientists of the region.

Assistance will be given in the scientific rehabilitation of the war devastated countries. The restoration of scientific libraries throughout the world will be facilitated through photographic reproductions and microfilms.

Grants-in-aid will be given for scientific work of international importance, such as type culture and collections of bacteria, algae, fungi and genetic mutants.

Grants will be allotted selected scientific expeditions and to aid existing international laboratories, such as the Marine Biological Station at Naples and the research laboratory on the Jungfraujoch.

Essential research equipment and material exchanges will be disseminated, notably by operating a scientific apparatus information bureau and by taking measures to overcome difficulties arising out of currency restrictions. A group of experts has already prepared a list of scientific instruments which includes already 20,000 items. The cost of equipment of various standard laboratories in various fields has been calculated.

The possibilities will be explored of creating new international laboratories for astronomy, applied mathematics (computing machines, for instance, to organize an exact method for a demographic survey), tropical diseases, oceanography and the migration of birds. The compilation of a world register of scientific institutions and scientists will be begun.

A plan is being urged to assist scientists in crossing national frontiers with their documents and scientific instruments.

Moreover, it has been decided, in agreement with the International Council of Scientific Unions, to resume the publication of scientific periodicals interrupted on account of the war. On the proposal of the Economic and Social Council of the United Nations Organization, UNESCO is to prepare a report on the organization of an international observatory, of a meteorological station in the Southern Hemisphere and of an international laboratory for studies on tuberculosis and another for food.

RELATIONS WITH OTHER SCIENTIFIC ORGANIZATIONS

The collaboration with other scientific organizations is of prime importance in order to avoid work on parallel lines and also in consideration of the restricted budget of UNESCO. A convention between UNESCO and the International Council of Scientific Union has been prepared. It consists in reciprocal consultation and representation, exchange of information and work in common for definite purposes. As regards relations with the World Health Organization, UNESCO contemplates taking over the purely scientific part of this organization and negotiations are in progress. A budget of $6,000,000 has been fixed covering the activity of all sections.

STRUCTURE OF ORGANIZATION

Every nation which is a member deputes a delegation of five representatives to the conference, which takes place every year; the next one will be in Mexico City in 1947.

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SPAIN

(From Our Regular Correspondent)

MADRID, Dec. 10, 1946.

Medical Schools and Other Scientific Departments and Hospitals

At present the medical schools are functioning normally, though they do not seem to hold the high scientific rank they attained in the years before the civil war. Results too are rather below the former standard, owing chiefly to the lack of sufciently trained and experienced educators. The filling of posts made vacant by the death, exile or political disqualification of their previous holders is still provided for by the outworn system of competitive examinations, now complicated by the fact that the ideological tendencies of candidates are taken into account and by the inadequate constitution of the boards of examiners, whose members are often not sufficiently trained in the specialties in question to be qualified to judge. Too often also recourse has to be had to the younger generation of teachers just out of school themselves and not fitted for the task of making a judicious selection, having furthermore only just occupied their own chairs. Notwithstanding all this, the voids are being gradually filled. Yet it is sad to see that men like J. F. Tello, T. Hernando, M. Varela Radio, J. Casas, B. Landete, E. Trobo (to name only a few from the Madrid Faculty of Medicine) and others who in the last twenty years had contributed by their high reputation abroad to the prestige of the Spanish medical schools are still excluded from the universities, although they are not absolutely deprived of their other civic rights. In recent months the hopeful rumor has got about that some who are living in Spain are to be reinstated, and Professor Marañon's return to his old functions seems to constitute a happy omen.

The aforementioned drawbacks are not so apparent in the hospitals in Madrid which are not attached to the university. True some old professors have been deprived of their posts—like Professor Manuel Tapia, and Professor I. Sanchez Covisa, who died recently—and they have not been replaced by really satisfactory men. However, some other excellent and already famous masters have entered the service, among them Professor C. Jimenez Diaz, Professor E. Oliver Pascual, Dr. J. Lopez Ibor (who has taken the place of the distinguished exile Professor G. R. Lafora), Dr. Benzo and Dr. R. Garcia Tapia, and from nearly all of these we are warranted in expecting fruitful work even if anything changes the political situation. Nevertheless, it is painful to think how scarce is the scientific production of the National Hospital for Infectious Diseases (the former Hospital del Rey) which, before the civil war, under the direction of Professor M. Tapia, did such great honor to Spanish medicine by its publications.

The most notable event in the field of medicine in the year 1945 was the return to his chair of endocrinology in the Madrid Faculty of Medicine of Professor Gregorio Marañon, who went into exile in 1936 but returned to Spain in 1943, not, however, without having overcome some difficulties. During his stay abroad he was one of the most eminent exponent of Spanish medical culture in various countries of America and Europe, where he has left, as a trace of his passage, a series of important books. The returning to him of his department in the Madrid General Hospital was gratifying; but his reinstatement in his chair in the university has caused joy to all in that corporation who so greatly deplored the lack of good teachers as well as in all intellectual spheres in the country. His masterly lectures in the past academic year gave a real impulse to the university: the clinical and scientific sessions began to grow in interest as a sign of work resumed in relatively poor circumstances and needing a powerful stimulus. The attendance was extremely large and, among others present, were many old masters and some of the present professors: a good proof of fraternal feeling. A course of weekly lectures was given by the best Spanish and well known foreign professors, including the Portuguese Professors Reynaldo Dos Santos and J. Cerqueira Gomes; while among the Spaniards were Professors T. Hernando, G. Marañon, J. Morros Sarda, E. Oliver Pascual, M. Tapia, J. Sacristan, J. Germain, P. Barceló, A. Duque Sampayo, Rodriguez y Perez and F. Vega Diaz. But among all these lectures, two given by Professor M. Tapia, now director of an important tuberculosis institution in Portugal, stood out, being imbued with their author's great clinical and pathologic experience; particular interest attaches to one on bronchial tuberculosis.

One more fact which contributes to the value of the resumption of work in Professor Marañon's clinic is the appearance of the *Boletin del Instituto de Patologia Medica*, similar in its purpose and contents to the *Proceedings of the Staff Meetings of the Mayo Clinic*, in which the basic work of this center is reproduced as well as certain novelties in clinical endocrinology.

BUENOS AIRES

(From Our Regular Correspondent)

Nov. 5, 1946.

Congress on Surgery

The Seventeenth Argentinean Congress of Surgery was recently held in Buenos Aires under the presidency of Dr. Pablo Mirizzi. The following physicians were official speakers: Enrique Castaño and A. Trabucco, "Trauma of Kidney"; Carlos E. Ottolenghi, "Open Fractures"; J. M. Delrio, "Treatment of Burns"; Lelio Zeno, "Sequels of Burns"; H. Marino, J. Piñero Sorondo and Carlos Ottolenghi, "Organization of Surgical Centers in Hospitals"; Alejandro J. Pavlovsky, "Diagnosis of Acute Occlusion of Small Intestine"; Oscar Copello, "Pseudotumors of Bones"; Dr. Allende, "Conceptions on Preoperative and Postoperative Periods." Surgical sessions and the exhibition of surgical films were parts of the program. The attendance at the congress was large.

Congress on Obstetrics

The Sixth Congress of Obstetrics and Gynecology met in Buenos Aires under the presidency of Arturo J. Risolia. The following physicians were official speakers: Josué A. Berutti on the forceps, and Jorge de Rezende of Rio de Janeiro and Enrique Thwaites Lastra of Buenos Aires on neoplasms in relation to pregnancy. Dr. Fred L. Adair of Chicago, who was especially invited, showed a film on "Delivery" and later lectured on "Rupture of Uterus."

Speakers for the second official topic were the following: Drs. Pablo Borrás of Rosario and Guillermo di Paola of Buenos Aires discussed the morphologic, glandular and psychic changes of adolescence. Drs. Luis D. Bottaro of Montevideo and Enrique Bazterrica of Buenos Aires discussed "Repercussion of Gynecologic Disorders on Urinary Apparatus of Women."

Meeting of Gastroenterologists

A meeting of Latin-American gastroenterologists and nutritionists was held under the auspices of the Sociedad de Gastroenterología y Nutrición of Buenos Aires, of which Dr. Pedro A. Maissa is the head. The main official topic was "Sigmoid Diseases Excluding Cancer." Drs. Julio Carrere of Uruguay, Mariano Castex, Carlos Bonorino Udaondo and Ivan Goñi Moreno of Buenos Aires were official speakers. By unanimous votes of Argentinean, Brazilian, Mexican and Uruguayan delegates, it was resolved to establish an Inter-American Association of Gastroenterology. A committee was appointed with Drs. Julio Carrere, Benigno Varela Fuentes and Carlos Alberto Estapé of Uruguay and Carlos Bonorino Udaondo, Oscar Copello and Pedro A. Maissa of Buenos Aires. The association will have headquarters in Buenos Aires. Inter-American congresses and medical works on gastroenterology will be arranged in the future by the association.

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Correspondence

PSYCHIATRIC CASUALTIES

To the Editor:—In a communication in the Nov. 9, 1946 issue of THE JOURNAL Dr. Koontz raised an issue of great importance to both medicine and society today in his discussion of the high incidence of psychiatric cases during the recent war. Such an incidence is not, of course, confined to members of the armed forces: it is rather exaggerated in this case owing to the additional stress of circumstances and brought into prominence by the careful attention it receives. But I would not hesitate to suggest that peacetime periods of stress, such as those of depression, result in an equally high incidence of psychiatric "casualties," which in this instance do not have the benefit of medical assistance or even of diagnosis.

That the increasing amount of maladjustment is more than a simple medical problem is implied in Dr. Koontz's second suggestion of its cause, "a change in our political philosophy," but I do not believe that this formulation is accurate enough to lead us to a successful solution. The phrase "political philosophy" is not defined by the correspondent, although he characterizes it as affecting the "patriotism and sense of duty of a great mass of our citizens." I would prefer to say that the change has been much broader, involving the attitudes of and to the whole society in which we live, and that the change in patriotism and sense of duty is only one aspect of the changing psychology of the period.

It has been well shown by sociologists, anthropologists and those psychiatrists who have used the social approach that any culture passes through an evolution of growth, maturity and decay. During the early expansionist period, creative activity of all kinds is high: material, artistic and spiritual developments are great and new areas of human skill and thought are explored. Later the dominant forms emerging out of the earlier activity become apparent as characteristic of the society. Finally, development slows, expression becomes stereotyped and tends toward the bizarre, and quantity and quality of all activity degenerates. During the first two periods the individual finds a place in society: he feels he owes it something and is willing to sacrifice himself for the good of society because it offers him something outside himself. Creative opportunity enables, in fact encourages, him to turn outward and lose himself. At such times the amount of maladjustment is low. During the later period of contraction the individual's opportunities become more limited and his frustration increases. He feels no larger purpose outside himself and that he has little reason to cooperate with others and consequently fails to achieve or maintain mental health. In short, the morale of society is low: there is not only little patriotism and little sense of duty but increased delinquency, divorce and general signs of maladjustment. Efforts to alleviate the situation in material terms, as by government relief during a depression, do have a bad effect on a citizenry that has been taught to believe, and in fact demonstrated to itself, that it can be self sufficient. But this is only a secondary effect on an already low morale. That it can be rapidly overcome given the right conditions is demonstrated by the remarkably high morale during the war of the British people, who suffered as much as any one by the dole.

In the periods of contraction, with their consequent ill effects on the mental health of the people, attempts are made to relieve this symptom of disorder in the social organism. Many theories and courses of action are suggested. Religious revivalists point to sin as the cause and salvation as the cure. Fascists and Nazis ascribe the symptoms to too much democracy and hail dictatorship and race superiority as solutions. (It is easy to see how the frustrations of people at this time can be played on by antiracial propaganda.) The psychiatrist is one who approaches the problem scientifically, but as long as he deals only with individuals he will see only symptoms and seek in vain, as does Dr. Koontz, for the underlying etiology. Some psychiatrists have suggested that the cause lies in faulty child upbringing and that the solution is proper psychologic education. But, though this takes us back one step in the chain, we are still dealing only with symptoms; and who is to educate the educators? It is my belief that the new "tactical alinement" of which Dr. Koontz speaks is for psychiatry to adopt a study of society itself and of the relation of the individual to society, taking all it can of the knowledge and methods of those sciences which have already entered the field. It must seek answers to the fundamental questions Why is society no longer expanding? What are the precise effects of the decay on the individuals comprising the society? and How do these effects develop from the primary cause? For this a study of other societies in different stages of development is essential. Psychiatry is not too young for the task—it is simply too naive.

F. W. HANLEY, M.D., Ottawa, Canada.

AGAINST EPONYMS

To the Editor:—I should like to call attention to an article in the Dec. 28, 1946 issue of THE JOURNAL, page 1070, entitled "Guillain-Barré Syndrome Treated with Neostigmine."

Comparatively few readers would know what the Guillain-Barré syndrome was, although most of us would know virus encephalomyelitis. Many of us would not bother reading about the Guillain-Barré syndrome since it would be completely foreign to us, while we would be highly interested to know about neostigmine treatment of such a common condition as virus encephalomyelitis. Thus perhaps valuable information would be missed because of personal name reference.

How much more interesting would it be if it read "Virus Encephalomyelitis Treated with Neostigmine." If it is really necessary to cater to the name of the man or men who first described a certain disease for reasons of stimulating people's interest or for reasons of good will, their name might be put in parentheses after the descriptive name rather than the reverse. I believe, however, that most medical men should be big enough to give to the profession their description of a new entity without requiring that their names be repeated and advertised whenever the disease entity is mentioned.

WILLIAM WOLF, M.D., New York.

REMOVAL OF ODOR FROM BOOKS

To the Editor:—In THE JOURNAL of Nov. 9, 1946, in Queries and Minor Notes, page 609, there appeared an inquiry from Don A. Duffie, M.D., of Central Lake, Mich., on getting rid of the smell of books.

While mold is frequently present and is popularly charged with causing the odor from books, especially when the relative humidity of the air is high, there are other factors which contribute to book deterioration and the accompanying odor. One potent cause is sulfur dioxide, which is a common ingredient of the atmosphere and is in high concentration over cities.

This menace has been controlled by recirculating the air of the library through activated carbon. This method not only reduces the sulfur dioxide content to a negligible quantity but at the same time removes any extraneous odors from the air. The system has been applied successfully to the Rare Books Rooms of the Widener Memorial Library at Harvard and of the Sterling Memorial Library at Yale and to the Archives Vault of the State Museum at Denver, Colo.

F. H. MUNKELT, Vice President,
W. B. Connor Engineering Corp.,
New York 16.

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MEDICAL JOURNALS NEEDED IN THE NETHERLANDS

To the Editor:—A friend of mine in the Netherlands to whom I have been sending various American magazines after I have read them asked me if I knew a doctor who would be willing to provide her son, a medical student, with old copies of THE JOURNAL. Instead, I sent a year's subscription to this young man, and I quote the letter of acknowledgment I have received from him:

> You cannot imagine how much I was surprised to hear from my mother that you intended to give me a year's subscription to THE JOURNAL. It is for a Dutch student in his third year a great sensation to get a journal which professors and doctors here try to get in vain. We have got a Dutch medical journal too but owing to the war it is not up to date and cannot be compared with the American ones. THE JOURNAL is even superior to the London *Lancet* and that's why so many medical people hanker after such an elaborate journal. I will of course share all the copies with my fellow students. After all these words I have forgotten to thank you but I think you will understand my gratitude.

Perhaps I should explain that because of the present currency controls in the Netherlands the Dutch cannot use their money to buy foreign exchange for anything but the vital necessities. Therefore many Dutch people who would be able and willing in normal times to pay for subscriptions to foreign publications cannot do so.

It occurs to me that many American doctors, if this was brought to their attention, would be more than happy to send subscriptions to doctors and students in the Netherlands. I am sure medical schools and medical associations in that country would be glad to furnish names or distribute the copies. Or some doctors might be willing to send their back files of THE JOURNAL for the war years.

The quoted letter makes it clear how gratefully your publication would be received and how generously it would be shared. As one who spent two of the war years in two European countries, I can testify to what a real privation it is to be denied access to current publications from abroad and how one longs for every contact with the outside world. I therefore hope that my fellow countrymen of the medical profession will find this suggestion good and respond to it.

MRS. C. A. TAYLOR.

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NEUROLOGIC COMPLICATIONS OF SPINAL ANESTHESIA

To the Editor:—In connection with the paper of Drs. Nicholson and Eversole on "Neurologic Complications of Spinal Anesthesia" (THE JOURNAL, Nov. 23, 1946), the following case seen in an Army hospital in 1943 may be of interest:

A Negro aged 30 had undergone an appendectomy about three months prior to the time I saw him. The operation was performed under spinal anesthesia, and metycaine (dose unknown) was used. Because the anesthetic would not take, a second dose of the same drug was introduced into the spinal canal and the operation successfully completed. The postoperative course was complicated by a slowly improving cauda equina syndrome. There was a complete paralysis of the lower extremities for about three days; urinary difficulties were reduced to mere hesitancy by the time the patient came under my observation. Hyperreflexia and sensory changes also were present.

The interesting feature of this case was the presence of sexual impotence. The patient stated that he had noticed the absence of erections immediately after the operation. The patient attempted intercourse about a month after the operation but was unsuccessful. Two months later women were still "sore" at him because of his impotence, although occasionally he would be able to complete the act. A follow-up of this case was impossible because of the military situation.

A review of the literature available in 1943 was negative as far as the description of sexual impotence following spinal anesthesia was concerned. I do not know of any case with similar symptoms described in the literature since.

PERCY MASON, M.D., New York.

BLOOD GROUP TESTS OF THE NEWBORN

To the Editor:—In the December 7 issue of THE JOURNAL Dr. M. A. Hyman recommends blood group tests for identification of the newborn child. The suggestion is not practical, because it recommends testing for far too large a number of blood factors.

Testing serums for factor P are very rare, difficult to obtain and frequently not reliable. They are seldom used even by experts. Also very rare is testing serum for factor Hr. Testing serums for factors M and N are easily prepared, but tests for these factors are best carried out by expertly trained workers. Subgroups of A are frequently not clearly differentiated in the newborn. Subgroup A_2 may be mistaken for O and A_1B for B. Even experts recommend "in affiliation cases not to carry out the (grouping) tests until the child is at least one month of age" (Wiener, A. S.: Blood Groups and Transfusion, 1943, p. 386). Thus, it is likely that the tests for factors P and Hr and for subgroups A_1, A_2, A_1B, and A_2B would have to be excluded at time of birth in most instances.

However, with the reservations mentioned, Dr. Hyman's suggestion is worthy of consideration. Tests for the A, B, O and Rh factors would add to the reliability of identification of the newborn infant by footprints. The mother's blood factors should also be determined as part of the prenatal examination.

ISRAEL DAVIDSOHN, M.D., Chicago.

NUTRITION DURING PREGNANCY

To the Editor:—In reference to the note "Prevention of Congenital Malformation" (THE JOURNAL, November 16, p. 674), I should like to add that there is another factor which ought to be taken into consideration; it is the question of maternal nutrition during gestation. There was a paper written about three or four years ago on this subject by a group in Boston and their work seemed to indicate that this also plays a role. I remember that at the time the significance of the work was not appreciated and that many people concerned with this aspect of medicine remained uninformed.

H. G. KEITEL, Lieutenant, M. C., A. U. S.,
Station Hospital, Fort Hamilton, Brooklyn.

SUGGESTION FOR FIXING NASAL TUBE

To the Editor:—I am offering a suggestion for fastening the Levin nasal tube in place, which I consider simple and practical.

After the tube is passed the desired distance and wiped free of lubricant, a 2 foot length of 1 or 2 inch gauze roller bandage is placed parallel to the tube, with its midpoint just beneath the nostril. The bandage is fastened to this point on the tube by a few turns of ½ inch adhesive tape. The bandage is then knotted over the tape, and the free ends are brought across the face over the ears and tied in the suboccipital region, as in tying the strings of a surgical mask.

This method is comfortable and avoids slipping of adhesive tape which has been loosened by perspiration.

JEROME SCHROFF, M.D., Baton Rouge, La.

Medical Motion Pictures

FILM REVIEWS

A New Horizon. 16 mm. Black and white, sound, 750 feet (1 reel), showing time twenty-one minutes. Produced in 1946 by RKO-Pathe, Inc. Presented by and procurable from the National Foundation for Infantile Paralysis 120 Broadway, New York 5.

This is a dialogue propaganda film on physical medicine. The story opens with two interns arguing about the diagnosis of the condition of a patient whom they see at a distance. They consult an orthopedist, who says that the patient is his and gives a diagnosis of poliomyelitis. The orthopedist then turns the interns over to a specialist in physical medicine in the treatment of poliomyelitis and other diseases. Some of the initial dialogue between the specialist in physical medicine and the interns is good, but there are many weak points. After this initial discussion the physiatrist and the interns walk through a department of physical medicine and see various types of patients receiving different kinds of physical treatment. Discussion turns to a curative workshop, and there are flashbacks to show how simple equipment is employed to rehabilitate patients at this workshop. There is a final talk by the physiatrist in which he makes an emotional appeal to the interns to employ good physical treatment, and then the camera focuses on the Oath of Hippocrates as the film ends.

To the physician interested in physical medicine, this film is disappointing. In general the script is well conceived, but one regrets the numerous minor weaknesses which ruin it and defeat its purpose. Despite good camera technic and a good overall general plan, the physician-actors in this propaganda dialogue just do not speak the language of scientific physicians. The interns' naive and rather stupid argument concerning the diagnosis of the condition of a patient whom they have not even examined will immediately antagonize most physicians. This defeats the main purpose of the film, which is obviously to arouse the respect of members of the medical profession for this important field of medical practice. Also the main character, the physiatrist, is not well cast and does not give the proper impression of scientific ability, maturity and forcefulness. This film was obviously conceived in a laudable effort to tell physicians more about physical medicine, and it is to be regretted that so much fine effort has been completely spoiled by lack of appreciation of the average physician's reaction to a number of minor weaknesses. One has a distinct feeling of disappointment because this could have been such a good film but has turned out so poorly.

The film was shown to a group of physicians without comment, and all immediately expressed unfavorable reactions. Among the comments were "medically amateurish," "undignified," "unprofessional," "more like a soap opera than a scientific presentation," "too obviously propaganda" and "it antagonizes rather than wins the interest of the physician."

The film will harm, not help, the development of proper respect for physical medicine by physicians.

Anesthesia. 16 mm., Color, sound, 825 feet (1 reel), showing time twenty-three minutes. Produced in 1946 by Princeton Film Center, Princeton, N. J. Professional adviser, E. A. Rovenstine, M.D. Procurable on loan from Merck & Co., Inc., Rahway, N. J.

This is a report type film dealing particularly with Vinethene anesthesia rather than with the much broader subject suggested by the title. The photography is excellent. The pronunciation of Vinethene should be changed in the narration. The clear presentation of the chemical properties of Vinethene (divinyl ether) would be enhanced by the addition of a structural formula and a comparison of ethyl ether. The method of administration of Vinethene alone and in combination with ethyl ether or nitrous oxide-oxygen is demonstrated. Several dental extractions and brief otolaryngologic surgical operations are shown. The film would have greater teaching value if certain important points, such as indications and contraindications, signs and treatment of overdosage, were presented in a visual text rather than only mentioned in the narration. A more thorough demonstration and discussion of fewer operative procedures, including the necessity of preanesthetic examination of heart and lungs and urinalysis on every patient, the importance of maintaining a patent airway to prevent anoxia, a suction device at hand on all surgical operations in the mouth and upper air passages and examination of the circulatory, respiratory and eye activity during anesthesia, would make this a valuable teaching film for medical students, dentists, surgeons and anesthesiologists.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Revocation of Doctor's License for Commission of an Abortion.—The Board of Medical Examiners revoked the defendant's license to practice medicine on the ground that he had been guilty of performing an abortion, and the revocation was sustained by the trial court. Accordingly the defendant appealed to the district court of appeal, first district, division 1, California.

The defendant's first point, said the court, deserves scant attention. He argued that, because the accusation against him was made by an agent of the respondent medical board and said board heard the evidence and determined defendant to be guilty, the defendant was deprived of his valuable property right to practice medicine without due process of law. No authority is cited in support of this contention. Under our statutes, continued the court, the right to practice medicine is granted to all qualified persons by the respondent board and said board is likewise granted the right, and indeed charged with the duty, to hear and determine any accusations bearing on the qualifications of a licensee to continue the practice of medicine. If a physician whose license is ordered revoked by the board is not satisfied with the determination of the board, he may, as was done in the instant case, apply to the superior court for a review of the board's action, and he then may have a full and complete hearing in the superior court. Not only is he not deprived of a right of property without due process but he is given ample legal opportunity to protect that right.

Section 2377 of the Business and Professions Code, the section which the defendant was charged with violating, provides:

> The procuring or aiding or abetting or attempting or agreeing or offering to procure a criminal abortion constitutes unprofessional conduct within the meaning of this chapter.

A criminal abortion is defined by section 274 of the Penal Code as follows:

> Every person who provides, supplies or administers to any woman, or procures for any woman to take any medicine, drug or substance, or uses or employs any instrument or other means whatever, with intent thereby to procure the miscarriage of such woman, unless the same is necessary to preserve her life, is punishable by imprisonment in the state prison not less than two nor more than five years.

The defendant's principal contention was that the evidence was insufficient to sustain either the board's order or the judgment of the trial court. A detailed analysis of the evidence, said the court, is not necessary to demonstrate that the Board of Medical Examiners was justified in concluding that the defendant committed certain prohibited acts with intent to cause a miscarriage on the persons of Miss Ballard and Mrs. Palmer and that the superior court was justified in reaching the same conclusion on the same record. It is difficult to understand how any other conclusion could be reached. The evidence showed that the defendant knew that both women were pregnant when they visited him, and he admittedly performed the acts amounting to an abortion. The evidence also showed that both women were in normal health, except for being pregnant, that the per-

formance of an abortion therefore was not necessary to save the life of either; also the defendant required each woman to sign a card which was later filled in to read that each had undergone an abortion prior to consulting the defendant. All essential elements of a criminal abortion were established, said the court, and the evidence abundantly sustains a violation of section 2377 of the Business and Professions Code. The proceeding here involved is an administrative, disciplinary proceeding and is not criminal in its nature nor is it to be judged by the legal standards applicable to criminal prosecutions. As stated in a prior case:

> Where, on the other hand, the legislature has created a professional board and has conferred upon it power to administer the provisions of a general regulatory plan governing the members of the profession, the overwhelming weight of authority has rejected any analogy which would require such a board to conduct its proceedings for the revocation of a license in accordance with theories developed in the field of criminal law. . . .

Finally the defendant argued that the evidence was insufficient because the 2 women involved were accomplices. The requirements of corroboration in a criminal case do not apply to administrative proceedings, said the court. This action not being criminal in its nature, it is apparent that the statutory mandate that a person may not be convicted on the uncorrobated testimony of an accomplice has no application here. We feel satisfied that any witness whose testimony as to competent facts was convincing to the board engaged in the hearing of the charge would be legally sufficient. We have already expressed the conclusion, the court said, that the testimony of persons who might be accomplices could be received and might be considered by the board trying the charge. Accordingly, the order of revocation entered by the Board of Medical Examiners and affirmed by the superior court was sustained.—*Murphy v. Board of Medical Examiners of California, 170 P. (2d) 510 (Calif., 1946).*

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Abnormally Long Pregnancy Raises No Presumption of Infidelity.—The plaintiff's husband filed suit for divorce on the ground of adultery, the case being heard in the Supreme Court, special term, Queens County, New York.

The plaintiff and defendant were married on March 12, 1944. On April 24, 1944 the plaintiff, an officer in the merchant marine, left the country for duty in the Pacific, returning to the United States Jan. 4, 1945. On April 14, 1945 the defendant gave birth to a child which she claims is the child of the plaintiff. The plaintiff offered no evidence of any misconduct on the defendant's part but asked for a decree solely on the hypothesis that it is impossible for a period of 355 days to elapse between coition and parturition.

A gynecologist who taught at the Yale Medical School, called as an expert witness by the plaintiff, testified that the accepted period of gestation is 270 days, with the longest authenticated period being 320 days. He admitted that there was a non-authenticated case of 369 days. A physician called by the defendant as an expert testified that the ordinary period of gestation is 280 days, or ten lunar months, but that there are instances of 328 days and 344 days.

The physician who attended the defendant during her pregnancy testified that the defendant came to her on Nov. 14, 1944, complaining of pain in the right side of the abdomen and said that she had previously had pain in the left side of the abdomen. The defendant informed the physician that her last menses was Oct. 4, 1944 and that the last time she had seen her husband was April 24, 1944. The physician advised her that the birth should take place about the end of January 1945. The defendant immediately wrote to her husband and informed his family as well as her own friends and family. On Feb. 5, 1945, when she examined the defendant, the physician said she found the head of the fetus engaged, a position of the head which generally occurs about a month prior to birth. In the light of this testimony, said the court, the birth should have occurred about March 5, 1945, which would have been 316 days from coition, a not improbable period of gestation. On Feb. 19, 1945, however, the physician again examined the defendant and, finding no sign of impending birth, recommended that the defendant go into a hospital. The defendant spent three days in a hospital, February 28, March 1 and March 2, during which time she received treatment to induce labor. These treatments were ineffectual, however, and the defendant returned to her home, finally giving birth to a 9 pound child on April 14, 1945. The physician stated that on every examination of the defendant the fetus was small.

It thus appears, said the court, that while the duration of pregnancy was 355 days, the head of the fetus was engaged for at least 68 days, which presents a question as to whether the last forty days were a part of the period of gestation proper or were due to difficulty in delivering the child.

In an English case decided in 1921, there was no evidence of misconduct on the part of the wife except the lapse of time between coition and the birth of the child, which was 331 days. Three leading medical authorities testified that such an interval could not be said to be impossible. Viscount Birkenhead in dismissing the petition said:

> In this case the only evidence of adultery is the admittedly abnormal length of pregnancy. No other fact or circumstance has been adduced which in the slightest degree casts any reflection upon the chastity or modesty of the respondent, who has on oath denied the alleged adultery. I can only find her guilty if I come to the conclusion that it is impossible, having regard to the present state of medical knowledge and belief, that the petitioner can be the father of the child. The expert evidence renders it manifest that there is no such impossibility. Under these circumstances I accept the evidence of the respondent and find that she had not committed adultery, and accordingly I dismiss the petition.

The New York court said that the presumption of legitimacy is one of the strongest and most persuasive known to the law. Even aside from this presumption, however, having regard to the evidence in this case and the present state of medical knowledge and belief, it cannot be said that it is impossible that the plaintiff is the father of this child. The expert evidence, plus the fact that the head of the fetus was engaged for 68 days when birth normally occurs within a month after such engagement, "renders it manifest that there is no such impossibility." The court accordingly rendered judgment in favor of the defendant and dismissed the complaint.—*Lockwood v. Lockwood, 62 N. Y. S. (2d) 910 (N. Y., 1946).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Jan. 25, page 267.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part III.* Durham, Oct. 21-23. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral.* Los Angeles, April 11-12. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers, March 24. Final date for filing application is Feb. 17. *Oral.* New York City, April 25-27. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Chicago, March 17. *Oral.* Chicago, April 24-26. Final date for filing application is Feb. 15. Asst. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY. *Oral.* Examination to be given during the Summer. Applications for examination will be accepted until Feb. 15. Sec., Dr. P. C. Bucy, 912 S. Wood St., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part II.* Pittsburgh. June 1-7. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral. All Groups. Parts I and II.* Chicago, October. Final date for filing application is March 1. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Me.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* St. Louis, April 16-20. Chicago, Oct. 7-11. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: Philadelphia, June 3-4. Final date for filing application is April 15. Sec., Dr. Robert A. Moore, Euclid Ave. and Kings Highway, St. Louis 10.

AMERICAN BOARD OF PEDIATRICS: Effective May 1, application fee will be $125.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

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Inquiry into Incidence of Hyperhidrosis in Convalescent Trench Foot. J. J. Silverman.—p. 702.

*Toxicity of Mercurial Diuretics: Observations on Eighteen Cases with Suggestions for Prevention of Toxic Reactions. S. Ben-Asher.—p. 711.

Electrocardiographic Changes. — Coincidentally with the increased application of electrocardiography, there has developed a tendency toward misuse of this method, due to the fact that its limitations have not been recognized. It is of value in the recognition of the cardiac arrhythmias and in the detection of myocardial infarction. It may be useful in determining if and when the heart has become involved during certain systemic diseases and in determining whether or not a person has been taking certain drugs, notably digitalis but also various malarial drugs, epinephrine, ergotamine tartrate, atropine, emetine, tobacco smoke and so on. The accepted standards of normality for the electrocardiogram are incorrect, since too many healthy young adults show changes which, according to these standards, are diagnostic of heart disease. Conditions not due to primary disease of the heart that may be associated with changes in the electrocardiogram similar to those caused by coronary sclerosis and myocardial disease include: acute infections, pericarditis, metabolic disorders, renal disease, acute manifestation of upper abdominal disease, pulmonary embolism and imbalance of the autonomic nervous system. Exercise may also cause changes in the electrocardiogram. The major cause for the more serious mistakes in interpretation is the widespread belief that changes in the QRST complex and especially the ST segments and T waves are specific for myocardial disease.

Toxicity of Mercurial Diuretics. — Ben-Asher reports reactions to mercurial diuretics in 18 cases, in 10 of which the reaction was delayed and was the result of dehydration. This type of reaction was associated with a high environmental temperature. Nine of these patients recovered with the administration of salt and water. In 8 cases the reaction occurred immediately after the injection. An immediate reaction in a patient under dehydration therapy indicates a poor prognosis. Reactions may be avoided by intermittent injections. Because excessive dehydration may follow diuresis and since chlorides may be lost through the sweat glands the mercurials should not be given during high environmental temperatures.

Archives of Ophthalmology, Chicago

36:531-660 (Nov.) 1946

Detachment of Retina: Pathologic and Therapeutic Considerations. H. Arruga.—p. 531.

Fluorescent Colors in Tangent Screen Examinations. J. B. Feldman and H. J. Abrahams.—p. 537.

Use of Berman Locator in Removal of Magnetic Intraocular Foreign Bodies. L. P. Guy.—p. 540.

Vascular Basis of Allergy of Eye and Its Adnexa. W. F. Duggan. —p. 551.

Experimental Studies on Blood-Aqueous Barrier: I. New Electrophotometric Method of Measuring the Concentration of Fluorescein in Aqueous. F. W. Stocker.—p. 612.

Archives of Surgery, Chicago

53:489-602 (Nov.) 1946

*Surgical Treatment of Patent Ductus Arteriosus: Report of 5 Cases. H. H. Bradshaw, W. L. Molineux and M. C. Bowman.—p. 489.

Lymphogranulomatous Strictures of Rectum: Résumé of 476 Cases. L. T. Wright, W. A. Freeman and J. V. Bolden.—p. 499.

Appendicitis: Review of 936 Cases at Cincinnati General Hospital. S. Tashiro and M. M. Zinninger.—p. 545.

Treatment of Poisoning with Rattlesnake Venom: Experiments with Negative Pressure, Tourniquet and Bulb Suction. C. H. Pope and L. W. Peterson.—p. 564.

Comparative Efficacy of Blood from Normal and from Burned Donors in Experimental Burns. M. D. McCarthy and W. M. Parkins. —p. 570.

*Burn Shock: Its Treatment with Continuous Hypodermoclysis of Isotonic Solution of Sodium Chloride into Burned Areas: Clinical Studies in 2 Cases. J. K. Berman, G. S. Pierce and M. M. Best. —p. 577.

Cysts of Duodenum. R. J. Booher and G. T. Pack.—p. 588.

Surgical Treatment of Patent Ductus Arteriosus.—Five patients whose ages varied between 18 and 30 years were operated on for patent ductus arteriosus. The ductus of 2 patients was doubly ligated, of 2 patients it was severed between clamps and the ends oversewn, and of 1 patient it was plicated. Bradshaw and his associates think that division of the patent ductus should be the procedure of choice when possible. One patient died. Four had subacute bacterial endarteritis complicating their congenital heart disease. These 4 patients had preoperative embolic accidents. The mediastinal pleura of the last 3 patients was closed, since it was felt that the area was sterile as the result of the penicillin therapy. Penicillin has materially aided in reducing the mortality rate of patients with subacute bacterial endocarditis superimposed on a congenital patent ductus arteriosus.

Treatment of Burn Shock with Hypodermoclysis of Isotonic Solution of Sodium Chloride.—Berman and his associates report observations on 2 patients treated with this method. One of these patients died and the other survived. They stress that this treatment of burn shock is useful in neutralizing or diluting hypothetic toxins, as illustrated in the

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patient whose burn toxemia was adequately controlled. In the patient who died it was at least partially neutralized. The patient who died had an alkalosis which may have been due to an excess of sodium. A warning is sounded concerning excessive administration of sodium and fluid. Even though the fluid is given subcutaneously or by mouth, it is believed that in the late stages of burn toxemia slight underhydration is safer than overhydration, and acidosis is more easily controlled than alkalosis. The authors conclude that the use of isotonic solution of sodium chloride by continuous hypodermoclysis into the burned area is to be recommended in extensive burns for burn shock and toxemia. It is useful during the granulation stage of burn wounds to increase resistance to infection and to stimulate healthy granulation tissue.

Blood, New York

1:459-564 (Nov.) 1946

Preservation of Normal Human Plasma in Liquid State: V. Clinical, Chemical, and Physicochemical Studies During Three Years of Storage at Room Temperature. E. L. Lozner, Sonia Lemish, A. Sue Campbell and L. R. Newhouser.—p. 459.
Platelet Counts and Platelet Function. P. M. Aggeler, Joan Howard and S. P. Lucia, with technical assistance of Edith Mills.—p. 472.
Pseudohemophilia: Case Study. W. Perkins.—p. 497.
Pseudohemophilia. S. Estren, L. Sanchez Médal and W. Dameshek. —p. 504.
Influence of Stilbamidine on Myeloma Cells. I. Snapper and B. Schneid. —p. 534.
Hematological Changes Following Administration of Large Doses of Quinacrine Hydrochloride. C. W. Mushett and H. Siegel.—p. 537.
Specificity of Isoagglutinin Response Following Injection of Group Substances into Group O Individuals. W. C. Boyd and F. C. Lowell. —p. 548.
Blood Groups, Subgroups and Rh Factor of Mapuche Indians of Province of Cautin, Chile. L. Sandoval S., C. Henckel and L. Givovich. —p. 555.

Storage of Human Plasma in the Liquid State.—Analysis of 3,384 questionnaires completed after administration of liquid plasma more than a year old indicates that the transfusion of such plasma is safe and beneficial up to at least three years of storage. The untoward reaction rate following these administrations was significantly less than that following a comparable series of 1,500 administrations of commercially prepared dried plasma. The chemical and physicochemical changes observed in plasma stored in the liquid state at room temperature are of no more clinical significance at the end of three years' storage than at the end of eighteen months, the present National Institute of Health expiration date. Because at the end of six months' storage liquid plasma is devoid of blood coagulation factors, complementary activity and probably other antibodies, it should not be administered to patients with either hemorrhagic diatheses or infections and who require these components specifically. Hence it should be used chiefly for its colloid content and should be subject to the same precautions regarding excessive dosage as is human serum albumin.

Pseudohemophilia.—A condition which is often hereditary and is characterized chiefly by a prolonged bleeding time in the presence of normal platelets is referred to as "pseudohemophilia" or "hereditary hemorrhagic thrombasthenia." Perkins presents the history of a patient with this condition, which was transmitted by and occurred only in the male line. The occurrence in the male offspring of the patient's father and of the latter's second wife irrefutably proves this point. The degree of prolongation of the bleeding time varied from day to day and was occasionally normal. Except for transient hypocalcemia with tetany, no defect in the blood elements or in clot formation was noted. There appears to be a failure of normal capillary constriction following trauma.

Bull. of the U. S. Army Med. Dept., Washington, D. C.

6:491-636 (Nov.) 1946

Clinical and Laboratory Observations on 256 Cases of Trichinosis. J. M. Oppenheim, C. B. Whims and A. W. Frisch.—p. 581.
General Hospital in Normandy Campaign. J. E. Dunphy and S. O. Hoerr.—p. 594.
Stress on Personnel Flying the "Hump." W. M. Jeffries.—p. 603.
Cercarial Antigen (S. Mansoni) Skin Test in Diagnosis and Management of Schistosomiasis Japonica. B. Katzin and H. Most.—p. 613.
Sarcoidosis: Report of 2 Cases. M. Lev and C. L. Hinkle.—p. 617.

Florida Medical Association Journal, Jacksonville

33:227-286 (Nov.) 1946

Significance of Soft Tissue Injuries. R. F. Stover.—p. 257.
Infantile Scurvy. A. W. White.—p. 260.
Maternal Mortality in Florida. Lucille J. Marsh.—p. 263.

Journal of Bone and Joint Surgery, Boston

28:659-944 (Oct.) 1946. **Partial Index**

*Management of Penetrating Wounds and Suppurative Arthritis of Knee Joint in Mediterranean Theater of Operations. O. P. Hampton Jr. —p. 659.
Skin Grafting in Treatment of Osteomyelitic War Wounds. R. P. Kelly.—p. 681.
*Restoration of Bone Strength with Reinforcement Bone Grafts. G. K. Carpenter, R. T. Rosenfeld and K. F. Mech.—p. 692.
Surgical Principles of Split Thickness Skin Grafting. A. L. Leveton. —p. 699.
Neurectomy to Produce Atrophy of Amputation Stump. A. O. Adams. —p. 716.
Multiple Innervation of Limb Muscles in Man. W. H. Hollinshead and J. E. Markee.—p. 721.
Active Splinting of Hand. S. Bunnell.—p. 732.
Operation for Nonunion of Fractures of Carpal Navicular. M. C. Cobey and R. K. White.—p. 757.
Conservative Treatment of Congenital Talipes Equinovarus. I. Blumenfeld, N. Kaplan and E. O. Hicks.—p. 765.
Treatment of Congenital Flat Foot. J. E. M. Thomson.—p. 787.
Internal Fixation of Trochanteric Fractures of Femur: Report of 103 Consecutive Cases. R. M. O'Brien, J. C. Shy and N. J. Bublis. —p. 791.
*Paget's Disease: Statistical Study of 82 Cases. F. W. Newman. —p. 798.
Posterior Approach to Superolateral Region of Tibia. E. B. Kaplan. —p. 805.
Surgical Procedure for Repair of Recurrent Dislocation of Shoulder Joint: Preliminary Report. E. H. Crosby.—p. 809.
Complete Dislocations of Acromioclavicular Joint: Nature of Traumatic Lesion and Effective Methods of Treatment, with Analysis of 41 Cases. M. R. Urist.—p. 813.
Panner's Metatarsal Disease: Condition of Aseptic Necrosis Simulating March Fracture. R. E. Van Demark and P. V. McCarthy.—p. 842.
Supracondyloid Process of Humerus. L. B. Barnard and S. M. McCoy. —p. 845.
Recurrent Dislocation of First Carpometacarpal Joint Repaired by Functional Tenodesis. O. C. Kestler.—p. 858.

Management of Penetrating Wounds of Knee Joint.—Hampton says that no sepsis of the knee joints was observed in patients treated with complete initial surgery, closure of the synovial membrane or capsule of the joint, and adequate immobilization. Suppurative arthritis with prolonged drainage and slow destruction of the articular surfaces was observed in several patients whose joints had moderate or even minimum intra-articular damage but in whom the excisional surgery had been poor and the joints had been left open for drainage. An aggressive surgical regimen was instituted in the 19 patients under close observation. Eight knee joints in which there had been only minimum exposure at the time of the initial operation were reopened. In 4, devitalized areas of articular cartilage were removed. After irrigation the joints were closed, penicillin was instilled and immobilization was provided. No suppurative arthritis followed. Six knee joints with suppurative arthritis, but without septic destruction of the joint, were opened widely. The joint was cleaned; blood clot and pus were removed by irrigation. The synovial membrane was sutured. Penicillin was instilled and immobilization was provided. Aspiration, irrigation and reinstillation of penicillin were performed at intervals of twenty-four or forty-eight hours for about a week. The sepsis was controlled. Subacute septic processes in 2 other knee joints also were treated surgically. Limb endangering sepsis in 3 knee joints was eradicated by resection of the joint. The authors stress that the initial surgical treatment should include arthrotomy, excision of the devitalized tissue, cleansing of the blood clot and débris from the joint, suture of the synovial membrane or capsule and immobilization of the limb. At reparative surgery, preferably from five to ten days after the intra-articular surgery, the skin should be sutured. In cases of suppurative arthritis the same surgical plan is indicated. Systemic penicillin supplemented by the local instillation of penicillin into the joint should be employed in patients with wounds and suppurative arthritis of the knee joint.

Reinforcement Bone Grafts.—According to Carpenter and his associates the condition called limited union is not to be confused with delayed union. Delayed union progresses to solid bony union in due time, and the end result is compatible with

normal function. Limited union is a condition of solid bony union; but the end result is a shaft which is incapable of normal function, since it is weaker and usually smaller than normal. The authors delay a bone graft operation until three months after complete wound healing in order to minimize the incidence of infection. The extent of bone healing at this time will nearly always indicate whether the fracture will progress to a complete and sufficient union by conservative measures. The authors performed a total of 52 reinforcement bone grafts for limited unions. The bones requiring operation were the femur, tibia, first metatarsal, humerus, ulna and radius. Tibial grafts with multiple chips and cancellous bone from the upper tibia were used in most cases. Iliac grafts may be used advantageously. As a general rule, screws are used to fix the graft and plaster casts for external fixation, except for the femur, which is almost always treated in suspension-traction.

Paget's Disease.—Newman in reviewing the case records at the Hospital of the University of Pennsylvania for a fifteen year period found 82 cases of Paget's disease in a total of about 127,000 histories. The disease shows about an equal distribution between the sexes. It occurs predominantly in late middle life. Only 29 patients entered hospitals because of pain in a part of the body where the bones were found to show pagetoid changes. Two patients complained chiefly of deformity, and 8 others had complaints related to cranial nerves in areas found to have pagetoid changes. In over 50 per cent of the cases, Paget's disease was an incidental finding. The pelvis was involved in 29 cases, the skull in 25, the spine in 16, the femur in 17, the tibia in 7, the humerus in 2 and the radius, fibula and metacarpals each in 1 case. The complications of Paget's disease are cranial nerve pressure, fractures, urinary calculi and sarcomatous degeneration. It is the complications of Paget's disease which usually cause the patient to seek medical care. Of the treatments directed against the symptoms of the disease as such the author mentions only roentgen therapy and magnesium carbonate.

Journal of Immunology, Baltimore

54:213-324 (Nov.) 1946

Immunochemistry of Toxins and Toxoids: II. Preparation and Immunologic Evaluation of Purified Tetanal Toxoid. L. Pillemer, D. B. Grossberg and Ruth G. Wittler.—p. 213.
*Influenza Index on Periodic Determination of Average Antibody Titers of Population Samples. B. S. Schwartz, J. H. Milstone, M. Bayliss and E. Decoursey.—p. 225.
Reactivation of Overneutralized Mixtures of Influenza Virus and Antibody. A. P. McKee and W. M. Hale.—p. 233.
Antigenicity of Alkali Treated Bovine Serum Protein. L. A. Kazal, R. J. DeFalco and L. E. Arnow.—p. 245.
Standardization of Cardiolipin-Lecithin-Cholesterol Antigen in Complement Fixation Test with Cerebrospinal Fluid. Elizabeth Maltaner and F. Maltaner.—p. 253.
Studies of Antipneumococcal Serum: VI. Changes in Complement Fixing Activity of Rabbit Serums During Periods of Immunization, Rest and Reimmunization. C. E. Rice.—p. 261.
Id.: VII. Complement Fixing Activity of Fractionated Rabbit Serum. Christine E. Rice and Gretchen R. Sickles.—p. 267.
Coliform Bacterium with Complete Antigens of Salmonella Newington. E. Seligmann and I. Saphra.—p. 275.
*Attenuation of Virulence with Retention of Antigenicity of Mumps Virus After Passage in Embryonated Egg. J. F. Enders, Jeanette H. Levens, J. Stokes Jr. and others.—p. 283.
Alterations in Pathogenesis of Experimental Lymphocytic Choriomeningitis Caused by Prepassage of Virus Through Heterologous Host. G. Shwartzman.—p. 293.
Preparation and Evaluation of Irradiated Toxoid from Toxin of Shigella Dysenteriae. Sara E. Branham and K. Habel.—p. 305.
Studies on Reversibility of Antigen-Antibody Reaction: II. Disaggregation of Agglutinated Pneumococci Exposed to Homologous Polysaccharide. Marion C. Morris and Helen V. Karr.—p. 315.

Influenza Index.—Schwartz and his associates propose a serologic index for the study of influenza, the use of a spectrophotometer for facilitating the estimation of hemagglutinin and antibody titers, and a simplified method of calculating hemagglutinin and antibody titers. They studied the antibody levels of the civilian and military population of Oahu following an epidemic of influenza B and during a period of mass vaccination carried on by the army. The index demonstrated the generally elevated level of influenzal antibody titer just after an epidemic, and the subsequent decline of that titer. The general antibody response to mass vaccination and the comparative antigenic effectiveness of the PR 8 and Lee components of the vaccine were demonstrated. The study also indicated an antigenic difference between the Lee strain of influenza B and a local strain of influenza B isolated during a recent epidemic.

Attenuation of Virulence with Retention of Antigenicity of Mumps Virus.—Enders and his co-workers found that after twenty-five serial passages in the embryonated egg the virus of mumps loses its capacity to induce typical experimental parotitis in the monkey when inoculated via Stensen's duct. Such attenuated virus immunizes the monkey against a subsequent inoculation of the agent in its virulent form. The attenuated virus likewise induces the formation of complement fixing antibody and the factor which inhibits hemoagglutination. There is evidence that the complement fixing antibody and the antihemoagglutinin are not identical. Mumps virus after twenty-five passages in the chick embryo appears to be no longer capable of inducing typical mumps in presumptively susceptible human beings when sprayed into the oral cavity. It may, however, irregularly lead to the formation of complement fixing antibody. The results of an experiment in 1 child suggest that the virus after a single egg passage may provide a more satisfactory immunizing agent.

Journal of Pharmacol. & Exper. Therap., Baltimore

88:195-322 (Nov.) 1946. **Partial Index**

Assay of Renotrophic Activity of Anterior Pituitary. Eleanor C. Hay.—p. 208.
Oxidation of Phenethylamine Derivatives by Amine Oxidase. L. O. Randall.—p. 216.
Toxicity of Stabilizers for Concentrated Human Albumin Solutions: I. Production of Cardiac Arrhythmias in Cats by Sodium Salts of Caprylic and Related Fatty Acids. V. E. Hall and M. S. Waldman.—p. 221.
Effect of Di-Isopropyl Fluorophosphate on Normal Human Eyes. R. O. Scholz and L. J. Wallen.—p. 238.
Prophylactic Effect of Hexamethylenetetramine in Dogs Exposed to High Concentrations of Phosgene. L. Karel and R. E. Weston.—p. 254.
Comparative Study of Several Barbiturates with Observations on Irreversible Neurologic Disturbances. S. Krop and H. Gold.—p. 260.
Protective Effect of Adrenolytic Drugs Against Fatal Myocardial Epinephrine Concentrations. W. Raab and R. J. Humphreys.—p. 268.
Pharmacology and Chemistry of Substances with Cardiac Activity: IV. Effect of Methylaminoethanol, Dimethylaminoethanol and Related Substances on Isolated Mammalian Heart. O. Krayer, A. Farah and F. C. Uhle.—p. 277.
Role of Hepatic Detoxification in p-Aminopropiophenone Induced Methemoglobinemia. J. Tepperman and O. Bodansky.—p. 287.
*Synergism Between Barbiturates and Ethyl Alcohol. Helen Ramsey and H. B. Haag.—p. 313.

Synergism Between Barbiturates and Alcohol.—Ramsey and Haag found that when sodium seconal was given orally to mice the lethal dose was considerably lowered when alcohol was given at the same time. The anesthetic dose of sodium pentothal for dogs was also reduced by previous oral administration of 95 per cent alcohol. Duration of anesthesia resulting from sodium pentothal injection was greatly increased in the presence of alcohol. The onset of anesthesia from injection of sodium barbital appeared to be delayed by the presence of alcohol, but the duration of anesthesia resulting from the injection of sodium barbital was materially increased by the presence of alcohol. The blood level of sodium barbital was not altered by the presence of alcohol. Picrotoxin was found less efficient as an analeptic in rabbits given sodium pentobarbital plus alcohol than in those given sodium pentobarbital alone.

Kentucky Medical Journal, Bowling Green

44:327-354 (Oct.) 1946

President's Address: "He Looked in the Liver." E. W. Jackson.—p. 330.
Agranulocytosis Following Thiouracil Therapy: Case Report. J. R. Hendon.—p. 336.
Endometriosis. I. Abell Jr.—p. 339.
Occupational Skin Diseases in Steel Industry. W. H. Rice.—p. 342.
Streptomycin in Hemophilus Influenzae Meningitis. J. W. Bruce, W. W. Nicholson, G. E. Prince and M. Z. Kaplan.—p. 345.
Tropical Skin Diseases with Practical Reference to Civilian Application. P. Mapother.—p. 348.

44:355-386 (Nov.) 1946

"More Stately Mansions." S. A. Overstreet.—p. 357.
Civilian Application of Wartime Surgical Advances. S. H. Flowers.—p. 363.
Transylvania Medical Library. C. A. Vance.—p. 365.

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New England Journal of Medicine, Boston

235:669-698 (Nov. 7) 1946

*Endometriosis: 200 Cases Considered from Viewpoint of Practitioner. J. Fallon, J. T. Brosnan and W. G. Moran.—p. 669.
Bright's Disease: Clinical Manifestations in Relation to Etiology and Prognosis. R. D. Pruitt.—p. 674.
Hepatic Complications of Amebiasis. H. Warshawsky, D. E. Nolan and W. Abramson.—p. 678.
*Friedländer Bacillus Meningitis Treated with Streptomycin. S. Tartakoff, B. Grynbaum and P. M. LeCompte.—p. 681.
Otolaryngology. C. G. Flake.—p. 684.
Colloid Carcinoma of Gallbladder, with Widespread Metastases.—p. 691.
Fibrous Dysplasia of Rib.—p. 693.

Endometriosis.—Fallon and his associates state that the diagnosis of endometriosis is oftener missed than made. They report 200 cases of external endometriosis, of which only 6 had entered the clinic with a correct diagnosis. During a period in which 107 cases of microscopically verified endometriosis were observed, only 78 cases of appendicitis were encountered in female patients; that is, endometriosis is more frequent than appendicitis. Endometriosis is a new growth of menstruating endometrium that, invading and sometimes metastasizing, tends to spread through the pelvis, causing chemical peritonitis, dense adhesions, sterility, destruction of ovaries and stricture of the pelvic intestine. The course, which is reversed by ovarian deactivation, may be arrested by excision of the lesions. To arrest without castration necessitates diagnosis before the lesions have become unresectable. The basic syndrome of endometriosis is cumulatively increasing pain at the time of the period occurring after about five years of menstruation without pregnancy. The prophylaxis seems to be early marriage and a child every few years.

Streptomycin in Meningitis Due to Friedländer's Bacillus.—Tartakoff and his associates report that a man from whom a meningioma was removed from the right hemisphere in the frontal area was diagnosed a week later as having meningitis, and Friedländer's bacillus type B was demonstrated in cultures of the blood and the spinal fluid. In spite of continued intramuscular and intrathecal penicillin, supplemented by sulfadiazine, the patient's condition became worse and although the spinal fluid showed no organisms it became increasingly gelatinous. Intrasternal administration of streptomycin was begun, but the man died three days later. It is significant that after the administration of streptomycin the spinal fluid became less viscid and that at necropsy study of the meninges and of the surface of the brain disclosed evidence of a nearly healed meningitis. Whether this would have been found if only the use of penicillin had been continued cannot be answered. Death was due to pulmonary embolism incident to a thrombophlebitis in the lower extremities.

North Carolina Medical Journal, Winston-Salem

7:585-632 (Nov.) 1946

Clinical Features of Psychoneuroses in World War II Veterans. M. H. Greenhill.—p. 585.
Use of Intravenous Iodine in Preparing the Patient with Toxic Diffuse Goiter for Operation. R. B. McKnight.—p. 590.
False Positive Serologic Tests for Syphilis. P. G. Reque.—p. 594.
Abdominal Cesarean Section in Asheville. C. N. Burton.—p. 596.
Diagnosis and Early Management of Inhaled and Ingested Foreign Bodies. G. B. Ferguson.—p. 598.
*Syncope as a Diagnostic Problem. E. W. Brian.—p. 603.
Clinical Importance of Rh Blood Type. J. B. Sidbury.—p. 606.
Spontaneous Mediastinal Emphysema: Case Report. R. M. Wheeler and W. M. Johnson.—p. 609.

Syncope as a Diagnostic Problem.—For purposes of differential diagnosis Brian divides the mechanisms producing syncope into four fairly well defined groups: cardiovascular, endocrine, neurogenic and psychogenic. Unconsciousness resulting from cardiovascular disorders is, as a rule, due to a sudden transitory diminution or cessation of cerebral blood flow. Metabolic disturbances may result in sudden loss of consciousness by producing hypoglycemia or lowering of the blood pressure, or both. Psychogenic and neurogenic fainting results from psychoneurotic and neurologic disturbances respectively. The latter is due to suddenly changing intracranial pressure and an associated variation in the cerebral arterial circulation.

Phillippine Medical Association Journal, Manila

22:223-286 (June) 1946

*Blood Bilirubin Determinations as Aid in Differentiations Between Peptic Ulcer and Portal Cirrhosis in Gastric Hemorrhage. R. J. Navarro, P. Ignacio and J. A. Silva.—p. 223.
Incidence of Cardiac Arrhythmias. J. M. Barcelona.—p. 233.
Digenia Simplex as Substitute in Treatment of Ascariasis. H. Lara, T. M. Gan, M. Y. Matias and A. C. Reyes.—p. 239.
Hyperalimentation Treatment of Peptic Ulcer with Amino Acids (Protein Hydrolysate) and Dextri-Maltose. C. Tui, A. M. Wright, J. H. Mulholland and others.—p. 243.
Disturbances of Associated or Conjugate Movements of Eye. G. de Ocampo.—p. 259.
Evaluation of Diets Served to Woman Students of University of Philippines. P. I. de Jesus, P. H. and S. G. Jao.—p. 263.
Treatment of Pneumonia in Children: (Report of 414 Cases in 1945). F. del Mundo.—p. 269.

Blood Bilirubin in Differentiation of Peptic Ulcer and Portal Cirrhosis.—Seven cases of massive gastric hemorrhage resulting in profuse hematemesis form the basis of this report by Navarro and his associates. Four of these patients had peptic ulcer and the other 3 had portal cirrhosis. The patients with peptic ulcer showed practically no bilirubin in the blood, while those with portal cirrhosis showed significant amounts of bilirubin. When clinical, laboratory or x-ray findings are not sufficiently distinct in cases of massive gastric hemorrhage, the bilirubin content of the blood may help in the differentiation of these two conditions.

Rhode Island Medical Journal, Providence

29:725-808 (Oct.) 1946

Background and Highlights of Rhode Island Hospital Unit in China-Burma-India Theater of War. I. A. Beck.—p. 739.
Overseas Experiences with Medical Service of 48th Evacuation Hospital. F. B. Cutts.—p. 740.
Overseas Experiences with Surgical Service of 48th Evacuation Hospital. J. M. Beardsley.—p. 744.
Experiences with Sympathectomy. J. P. Eddy.—p. 747.
Prolonged Endotracheal Oxygen: Case Report. O. F. Smith and R. E. Douglas.—p. 754.
Importance of X-Ray Department. E. W. Benjamin.—p. 763.

29:809-892 (Nov.) 1946

Management of the Convulsive Child. C. Bradley.—p. 823.
Neuropsychiatric Disorders, Office and Hospital Treatment. H. E. Kiene.—p. 829.
Present Problems and Procedures in Neuropsychiatric Outpatient Service. D. G. Wright.—p. 838.

Southern Surgeon, Atlanta, Ga.

12:269-328 (Nov.) 1946

*Carcinoma of Colon: Analysis of 113 Cases. A. Ochsner and M. O. Hines.—p. 269.
Practical Aspects of Rh Factor. J. T. Funk.—p. 289.
Differential Diagnosis of Intervertebral Cartilage Ruptures and Intraspinal Tumors within Lumbar Sacral Canal. E. F. Fincher.—p. 292.
Treatment of Acute Hematogenous Osteomyelitis. T. H. Blake.—p. 305.
Cholelithiasis: Modern Principles of Therapy. J. O. Morgan.—p. 309.
Charles Jefferson Miller—His Teaching in Therapy of Puerperal Sepsis. C. G. Collins.—p. 318.

Carcinoma of the Colon.—Ochsner and Hines review observations in 113 cases of carcinoma of the colon in 45 of which there was evidence of extension. The resectability of lesions in the right colon and those of the rectosigmoid were approximately the same, 81.8 and 84.3 per cent respectively. Lesions of the left colon, exclusive of the rectosigmoid and rectum, had a much lower incidence of resectability (65 per cent). The authors stress that the curative treatment of malignant lesions of the colon consists in wide removal of the involved portion of the bowel and the possible sites of metastasis. Although reestablishment of the continuity of the bowel in low-lying lesions has become quite popular, the authors believe that in any lesions except the extremely small ones in which there can be no extension distally abdominoperineal resection is the operation of choice and that as long as attempts are made to preserve the sphincter the recurrence rate and death rate from carcinoma will continue to be high.

Virginia Medical Monthly, Richmond

73:439-487 (Oct.) 1946

Plan for Improving Hospital Treatment of Psychiatric Patients. P. G. Hamlin.—p. 441.
Consideration of Urologic Care of Paraplegics. H. S. Talbot.—p. 449.
Cataract Surgery—Recent Developments. E. G. Gill.—p. 456.

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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

30:645-708 (Nov.) 1946. **Partial Index**

Some Historical Notes on Spectacles and on Beryllus. G. T. Doesschate.—p. 660.
Plastic Restoration of Upper Lid and Socket. J. Luc.—p. 665.
Surgical Anatomy of Facial Nerve with Reference to Technic of Orbicularis Block (Palpebral Akinesia). M. Klein.—p. 668.
Certain Operations on Superior Oblique. J. Foster.—p. 676.
Inflammatory Jugular Phlebostenosis as Cause of Glaucoma Exogenicum. O. Meyer.—p. 682.
Ocular Lesions in Internees at Civilian Internment Camp at Hong Kong. H. Talbot.—p. 688.
Bilateral Partial Coloboma of Optic Nerve. J. A. Magnus.—p. 692.
*Deposition of Mercury in Eye. I. Abramowicz.—p. 696.

Deposition of Mercury in the Eye.—Abramowicz reports the experience of a woman aged 57 who requested the removal of dark pigmentation of the eyelids of both eyes. At the age of 16 she had had "blepharitis" and from that time on, in fear of a relapse, she continued to employ a remedy nearly every night. Now she was asking for the removal of the pigmentation which appeared about ten years ago and gives her much trouble because of resemblance to an exaggerated makeup. Examination revealed deposition of mercury in the eyelids, the bulbar conjunctiva, the region of Descemet's membrane and the anterior lens capsule.

British Medical Journal, London

2:681-722 (Nov. 9) 1946

*Tetraethyl Lead Poisoning. D. A. K. Cassells and E. C. Dodds.—p. 681.
*Postpenicillin Jaundice. R. R. Hughes.—p. 685.
Pyogenic Osteomyelitis of Spine. P. Martin.—p. 688.
*Treatment of Osteoarthritis by Lactic Acid Injection: Series of 26 Consecutive Cases in General Practice. R. Mawson.—p. 691.
Disappearance of Secondary Sarcomatous Deposits in Lungs After Stilbestrol Therapy. J. G. Roberts.—p. 693.

Tetraethyl Lead Poisoning.—Tetraethyl lead is the active ingredient of ethyl fluid, an anti-knock compound. Cassells and Dodds are concerned with the hazard involved in the cleaning of storage tanks which have contained leaded gasoline. After the cessation of hostilities a number of tanks which had been constructed for war purposes were no longer required. The regulations governing the cleaning procedure were overlooked or disobeyed in some instances, with the result that 25 cases of poisoning occurred, 2 of which were fatal. The earliest symptoms were disturbance of sleep and symptoms referable to the alimentary tract, such as lack of appetite, nausea, vomiting and diarrhea. Subjective nervous symptoms were irritability, restlessness, nervousness and anxiety. Pallor was not a feature, nor did punctate basophilia appear. If death does not occur, recovery is usually complete. All that is necessary in the milder cases is removal from exposure, light exercise in the open air, a normal diet with plenty of fluids, and the relief of sleeplessness by a suitable sedative. The treatment of the severe case calls for strict nursing supervision in view of the impulsive suicidal tendencies and the need for adequate fluid intake and sedation.

Jaundice After Penicillin Treatment.—Hughes found that of 124 patients with hepatitis treated in a military hospital in India 36 had had penicillin treatment. He thinks that this condition is transmitted from patient to patient by means of contaminated syringes. Experiments are described which show that a single intramuscular injection of 1 cc. of fluid may lead to contamination of the syringe used. The mechanism by which this contamination occurs is discussed.

Lactic Acid Injection in Osteoarthritis.—Stimulated by the work of Waugh on intra-articular injection of lactic acid with procaine into the hip, Mawson recently gave his treatment to 26 patients. From 15 to 20 cc. of a stable solution of 0.2 per cent lactic acid with procaine having a hydrogen ion concentration of 5.2 is injected into and around the hip joint on each occasion. A similar amount may be injected into the knee joint, but the wrist joint will only take amounts varying from 2 to 5 cc. After the injection the patient has to put the joint through all its movements. Two days of bed rest is prescribed. A second injection is given after seven days. Subsequent injections up to six are given if needed. All the 6 wage earners were able to return to work. Of the remaining 20, who were mostly housewives, 18 experienced considerable relief.

Lancet, London

2:663-702 (Nov. 9) 1946

Chilblains in Servicewomen. Albertine L. Winner and E. S. Cooper-Willis.—p. 663.
*Traumatic Pulmonary Edema Treated with Concentrated Plasma. G. Cleland.—p. 667.
Acute Phosgene Poisoning: Effects of Plasma Replacement: Experiments with Dogs and Goats. F. C. Courtice and G. L. Foss.—p. 670.
*Salt Deficiency in Sprue. D. A. K. Black.—p. 671.
Myocardial Fibrosis Following Arsenical Therapy: Report of Case. J. R. Edge.—p. 675.

Concentrated Plasma in Traumatic Pulmonary Edema.—According to Cleland pulmonary edema due to trauma is observed in burns due to underground explosions in mines, in gasoline explosions, in accidental inhalation of noxious gases in industry and in accidental overtransfusion. On the basis of illustrative cases he shows that intravenous concentrated plasma has seemed to be a valuable addition in the treatment of pulmonary edema due to trauma. There has been no tendency for the pulmonary edema to recur after this treatment. Apart from the risk of reactions to the plasma, the method is dangerous only if applied without preliminary venesection in cases of pulmonary edema due to overtransfusion.

Salt Deficiency in Sprue.—The 10 patients investigated by Black were selected from several hundred with sprue. The basis of selection was low blood pressure with asthenia, and signs of peripheral circulatory failure. The patients had low serum sodium and serum chloride levels and in some cases a plasma volume which was low in relation to body weight. When the patient was put on a high intake of salt, sodium and chloride were both retained, and the serum sodium and serum chloride rose to normal levels; the blood pressure rose and clinical signs of dehydration disappeared, though the abnormal loss of fat in the stools was not affected. Loss of electrolyte in copious watery stools is thought to be the main cause of the salt deficiency, but diminished intake of salt in anorexic patients is also a factor. The results reported do not suggest adrenal insufficiency. Treatment by increasing the salt intake to 15 Gm. a day corrects the dehydration in a few days.

Medical Journal of Australia, Sydney

2:469-504 (Oct. 5) 1946

Juvenile Rheumatism: Survey from Children's Hospital, Melbourne, with Addendum on Follow-Up System of Almoners of Hospital. G. E. M. Scott.—p. 469.
Fibrositis and Common Pains of Daily Practice. M. Kelly.—p. 480.
Lumbago. J. H. Young.—p. 485.

2:505-540 (Oct. 12) 1946

Disorders of Micturition. H. H. Schlink.—p. 512.
Disorders of Micturition in the Female. A. B. Walker-Smith.—p. 516.
*Toxic Goiter in the Middle Aged and Elderly. R. Whishaw.—p. 519.
Renal Glomerular Lesions in Eclamptic Toxemia. A. J. Canny.—p. 521.

Toxic Goiter in the Middle Aged and Elderly.—Thyrotoxicosis is a relatively common disease in the middle aged and elderly and may be present without a visible goiter or eye signs, and tachycardia may be minimal. Nearly all patients lose weight and are a little tremulous and weak. They tend to have high pulse pressures and hypertension and are usually breathless. The importance of early diagnosis and treatment is stressed, because degenerative cardiovascular changes tend to be accelerated by the condition.

Practitioner, London

157:333-412 (Nov.) 1946

Pneumonia. J. G. Scadding.—p. 333.
Influenza. J. N. Cruickshank.—p. 341.
Sore Throats and Tonsillitis. T. B. Layton.—p. 349.
Chilblains. J. E. M. Wigley.—p. 353.
Winter Ailments of the Old. H. Barber.—p. 357.
Winter Ailments in Infancy. C. McNeil.—p. 362.
Low Back Pain and Sciatica. A. S. Blundell Bankart.—p. 367.
Anesthetics in Obstetric Practice. A. D. Marston.—p. 372.
Acne Vulgaris and Its Treatment. G. B. Mitchell-Heggs.—p. 379.
Geriatrics: Medical, Social and Economic Problem. Marjory W. Warren.—p. 384.
Vitamin K in General Practice. D. M. Evans.—p. 391.

Proceedings of Royal Society of Medicine, London

39:763-848 (Oct.) 1946. **Partial Index**

Peculiarities in Pathology of Cancer of Anorectal Region. C. E. Dukes.—p. 763.
Surgical Complications of Amebic Dysentery. K. L. James.—p. 766.
Depersonalization Syndrome. H. J. Shorvon.—p. 779.
Penicillin Concentration in Blood and Milk of Bovines. G. Slavin.—p. 793.
*Outbreak of Industrial Fluorosis in Cattle. H. H. Green.—p. 795.
Leishmaniasis in Greece. B. Malamos.—p. 799.
Evidence for Vascular Mechanism in Ménière's Syndrome. M. Atkinson.—p. 807.
Ménière's Disease—Critical Review. A. J. Wright.—p. 809.
Report on 110 Cases of Acute Infection of Ear Treated with Penicillin. C. P. Wilson.—p. 812.
Application of Electromyography to Affections of Facial and Intrinsic Laryngeal Muscles. B. Feinstein.—p. 817.
Recent Developments in Manufacture, Fitting and Prescription of Contact Lenses of Regular Shape. F. Ridley.—p. 842.

Industrial Fluorosis.—Green says that, during the calcining of ironstone, smoke drifts on to neighboring farms, and on the nearest of these an obscure disease of cattle was reported. Samples of urine established a diagnosis by revealing 26 to 69 parts per million of fluorine. Samples of water from the affected farm showed only 0.5 part per million of fluorine, but grass samples within a few hundred yards of the burning mounds showed over 2,000 parts per million on the dry matter. The urine of the human family on the farm showed 1.3 to 4.2 parts per million of fluorine, thus averaging less than one-tenth that of the cattle urines but nevertheless being above normal and far above the value in the drinking water. Surface contamination of green vegetables is suggested as the source.

Transactions Royal Soc. Trop. Med. and Hyg., London

40:103-204 (Oct.) 1946

Effect of Antimalarial Drugs on Plasmodium Falciparum (New Guinea Strains) Developing in Vitro. R. H. Black.—p. 163.
Concerning Exoerythrocytic Forms and Evidence for Their Existence in Human Malaria. D. G. Davey.—p. 171.
Growth of Protozoa in Tissue Culture: II. Plasmodium Relictum, Exoerythrocytic Forms. F. Hawking.—p. 183.
Latency and Long-Term Relapses in Benign Tertian Malaria. P. G. Shute.—p. 189.

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Paris Médical

2:401-412 (Sept. 14) 1946

*Aminothiazole (2921 RP) in Treatment of Toxic Diffuse Goiter. M. Perrault.—p. 401.
Prophylaxis of Acute Poliomyelitis. J. Pignot.—p. 410.

Treatment of Toxic Diffuse Goiter.—Perrault administered the French synthetic antithyroid agent aminothiazole (abadol) to 129 patients with toxic diffuse goiter, 0.4 Gm. being given in equally divided tablets of 0.1 Gm. four times daily. There were a few untoward reactions within the first two weeks of treatment in 15 cases (11.6 per cent), drug fever in 7, erythema in 3, urticaria in 1, nausea in 2 and backache with oliguria in 2. Simultaneous administration of amidonicotinic acid and occasionally of sodium hyposulfite or magnesia will prevent these untoward reactions. Aminothiazole is the treatment of choice in thyrotoxic cases of medium severity; it is indispensable in the preoperative treatment in severe cases, and it may be of the same value as iodine therapy in the mild cases.

Presse Médicale, Paris

54:569-580 (Sept. 7) 1946

Differentiation of Spontaneous Vasomotor Syndromes in Upper Extremity; Syndrome of Insufficiency of Vasoconstrictors; Syndrome of Standing Position; Syndrome of Dorsal Decubitus. R. Leriche.—p. 569.
*Electrocardiography in Malignant Diphtheria: Clinical and Prognostic Study. P. Giraud, A. Jouve, J. Senez and A. Heurtematte.—p. 570.
Cholinesterase and Pseudocholinesterase: Difficulty of Interpretation of Results of Serum Cholinesterase Studies in Pathology. D. Vincent.—p. 571.
Cavity of Apex of Lower Lobe: Clinical and Roentgenologic Features and Collapse Therapy. Y. Hebraud.—p. 573.

Electrocardiography in Malignant Diphtheria.—Giraud and his associates studied the electrocardiographic alterations in 33 patients with malignant diphtheria. Sinus tachycardia occurred frequently at the onset of the disease. In 12 cases auriculoventricular dissociation was observed from the fourth to the twelfth day of the disease, and a rapid ventricular rhythm with more than sixty and up to eighty and one hundred contractions per minute was observed in 11 of these cases. Paroxysmal ventricular tachycardia characterized the terminal period of the disease. Interauricular dissociation was observed in 2 cases with one series of positive P waves after a normal PR interval and with a second series of negative P waves maintaining a regular rhythm. In the great majority of the cases the alterations in the electrocardiogram occurred from the fifth to the twelfth day, but in some toxic cases death occurred in the absence of decisive alterations. A latent period precedes the appearance of definite anomalies, but in even less fulminating cases death may occur in the stage of branch block with only minor alterations in the electrocardiogram. Serial electrocardiographic studies should be made daily in the course of malignant diphtheria because of the changeable and transitory character of the graphic alterations.

Semaine des Hôpitaux de Paris

22:1607-1642 (Sept. 14) 1946

*Coagulation Power of Plasma and of Serum in Hemophiliac. P. Chevallier, M. Guillot, A. Fiehrer and C. Pasquier.—p. 1607.
Immediate and Late Results from Treatment of Early Syphilis with Bismuth Exclusively (Statistics of Fournier's Polyclinic). F. Coste and J. Nehlil.—p. 1610.
Puncture Associated with Injection of Thorotrast and Complete Removal in Treatment of Multilocular Cerebral Abscess. J. LeBeau and G. Guiot.—p. 1611.
Iron in Blood of Patients with Icterus and Anemia. P. Rambert, A. Morel, J. Boissier and R. Negri.—p. 1617.

Coagulating Property of Blood of a Hemophiliac.—Chevallier and his co-workers determined the coagulating property of the plasma and the serum of a hemophiliac in the presence of an excess of calcium and in a medium deficient in calcium. Complete absence of the coagulating property of the plasma and the serum of the hemophiliac was noted in a medium deficient in calcium. In the presence of an excess of calcium there was an initial absence of coagulating effect of the plasma and the serum of the hemophiliac for about thirty minutes. This was followed by a slow increase in coagulation. The coagulating property of the plasma and serum of the hemophiliac is considerably less than that of a normal person. There is a considerable delay in the appearance of the soluble thromboplastin in the extravasated plasma of a hemophiliac and an absence of free thrombin. Ultramicroscopic and photographic studies of the coagulum of the hemophiliac showed that its structure differs from that of a normal person. The specific structure of hemophilic fibrinous coagulum is closely related to the absence of free thrombin, which is absorbed by the hemophilic fibrin. The serum of a hemophiliac is rich only in free active prothrombin and its coagulating power in the presence of calcium appears almost equal to that of the normal serum. In vitro studies of the plasma of the hemophiliac showed that occasionally the clot undergoes considerable retraction and that most frequently the clot retraction is superior to that of the normal plasma.

Schweizerische medizinische Wochenschrift, Basel

76:815-838 (Sept. 7) 1946. **Partial Index**

Miliary Pneumonia of an Unusually Severe Course (Miliary Virus Pneumonias). W. Löffler and S. Moeschlin.—p. 815.
*Action Mechanism of Epinephrine. H. Staub.—p. 818.
Urethane in Leukemia. M. Kartagener.—p. 821.
Diuretic Action of 2,4-Diaminotriazine in Human Subjects: Preliminary Report. H. Ludwig.—p. 822.
Diuresis and Diuretics. O. Spühler.—p. 824.

Action Mechanism of Epinephrine.—Staub made determinations of the histamine content of the blood of human subjects following the intravenous administration of from 0.1 to 0.2 mg. of epinephrine, that is, of doses used therapeutically. It was found that the increase in histamine already begins during the injection of epinephrine, reaches its maximum at the end of the injection and rapidly decreases to normal values. Simultaneous determination of blood pressure, pulse frequency and leukocyte number reveals a time relation between decrease in blood pressure and maximum histaminemia. The 2 persons who had the highest increase in plasma histamine had also the most severe subjective disturbances, such as palpitation, anxiety and a feeling of weakness, so that these may be ascribed to the

action of histamine. The author considers it probable that epinephrine vasoconstriction leads to reactive histamine discharge into the periphery and thus counteracts toxic epinephrine effects. He thinks that manifestations of collapse following conduction and infiltration anesthesia may be due to the effect of histamine. Undesirable side effects ot epinephrine during local anesthesia might be counteracted by antihistamine substances.

76:841-982 (Sept. 21) 1946. Partial Index

Acoustic Trauma: Its Origin and Prevention. L. Ruedi and W. Furrer. —p. 843.
High Altitude in Treatment of Tuberculosis. J. E. Wolf.—p. 870.
Amputations. G. Perkins.—p. 874.
Twenty Years of Research in Typhus Fever. H. Mooser.—p. 877.
*Nutrition in Switzerland During War. A. Fleisch.—p. 889.
Experimental Diabetes Mellitus. F. G. Young.—p. 894.
Normal and Defective Fat Absorption in Man. A. C. Frazer.—p. 903.
Immediate and Late Results of Carotid Ligation in Intracranial Aneurysms. H. Krayenbühl.—p. 908.

Nutrition in Switzerland During the War.—Observations made on the 4 million inhabitants of Switzerland during the six war years show, says Fleisch, that the large amounts of calories, proteins and fat formerly considered as the optimum and which were eaten in such countries as the United States, England and Switzerland are not necessary. They probably do not represent the optimum for health. Whereas the League of Nations designates 2,400 calories as the standard for an adult not engaged in manual labor, Swiss observations indicate that 2,160 calories is sufficient. The standard of 1 Gm. of protein and 1 Gm. of fat per kilogram of weight seems adequate. A part of the meat and eggs eaten before the war and a large part of the cooking fats, sugar, white bread and macaroni can be replaced with good effects on the health by potatoes, vegetables, fruit and dark bread. From 75 to 90 per cent of calories are lost for human consumption if wheat is used to feed fowl and corn or barley as fodder for meat producing animals.

Giornale di Medicina, Palermo

3:95-138 (March-April) 1946. Partial Index

*Large Embolism in Bacterial Endocarditis in Course of Penicillin Therapy. G. Fradà.—p. 95.

Large Embolism in Penicillin Therapy in Bacterial Endocarditis.—Fradà directs attention to the frequency of embolism of the large blood vessels occurring in the course of penicillin therapy in acute and subacute bacterial endocarditis. Embolism of the large blood vessels took place in 4 of his 8 patients with acute or subacute bacterial endocarditis in the course of penicillin therapy. It occurred on the second or third day of the treatment. Embolism of the abdominal aorta took place in 1 case, in the femoral artery in 2 cases and in the axillary artery in 1 case. The author believes that penicillin increases coagulability of the blood and diminishes the resistance of the pathologic segments of the endocardium with consequent formation of thrombi. Liberal administration of papaverine and vitamin PP was without effect in the author's 3 cases.

Wiener klinische Wochenschrift, Vienna

58:221-236 (May 3) 1946

More Recent Views on Concussion Syndrome. K. Nowotny.—p. 221.
Limits Between Home and Hospital Deliveries. T. Antoine.—p. 223.
Morphologic Observations after Endolumbar Injection of Sulfapyridine and Sulfathiazole. W. Zischka.—p. 225.
*Cancer of Apex of Lung and Tumor of Superior Pulmonary Sulcus (Pancoast Tumor). O. Wichtl.—p. 228.

Apical Lung Cancer and Tumor of Superior Pulmonary Sulcus.—Among the necropsy reports of 10,209 patients who had been admitted to the Emperor Francis-Joseph Hospital in Vienna during the decade of 1933 to 1942, Wichtl found 302 reports of bronchial cancer, 43 with peripheral localization. Twelve of the latter group were to be considered as tumors of the apex of the lung, and only 2 of these were "Pancoast tumors." Microscopic studies suggest that the occurrence of cancer may be favored by tuberculous changes, which are frequently observed at this site, while Pancoast's concept that the tumor may arise from some embryonal rest is repudiated. The involvement of the superior pulmonary sulcus is explained by the restricted space within the thoracic cupola.

Acta Medica Orientalia, Jerusalem

5:249-284 (Aug.) 1946

Psychologic Methods of Obtaining Medical Information. F. Deutsch. —p. 249.
Penicillin Therapy of Early Syphilis. F. Stern.—p. 273.
Treatment of Recurrent Shoulder Dislocation with Autohemo-Injections. N. Kook.—p. 277.
*Mumps with Edema of Anterior Wall of Whole Body. K. Chrysanthis. —p. 279.
Klippel-Feil Malformation Associated with Syringomyelia. S. Sametnik. —p. 280.

Edema of Anterior Part of Body in Mumps.—Chrysanthis observed a girl aged 2 years and 3 months in whom infectious parotitis was associated with swelling of the sublingual glands and complicated by an edema of the anterior wall of the whole body from the upper part of the chest to the hypogastric region. The edema diminished gradually from the fourth day on and disappeared on the eighth day.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

90:1063-1102 (Aug. 31) 1946

Treatment of Varicose Crural Ulcer. J. S. van Coevorden.—p. 1067.
Penicillin in Treatment of Gonococcic Infections. M. K. Polano and W. G. van Den Upwich.—p. 1070.
*Unusual Case of Mycosis Fungoides. A. Lommen.—p. 1073.
Combined Degeneration of Posterior and Lateral Columns in Hypochromic Anemia with Gastric Achylia. A. Verjaal.—p. 1076.

Mycosis Fungoides.—Lommen reports the history of a woman with mycosis fungoides who has been free from relapse for over twenty-two years. The author feels justified in reporting this case since he was unable to find in the literature of the last twenty years any other report indicating such a prolonged cure in mycosis fungoides. This result was obtained with prolonged roentgen therapy.

Acta Dermato-Venereologica, Stockholm

26:489-580 (May) 1946

*Congenital Familial Anhidrosis and Neurolabyrinthitis. H. F. Helweg-Larsen and K. Ludvigsen.—p. 489.
Isolation of Atypical Strains of Neisseria Catarrhalis from the Genitourinary Tract. S. D. Henriksen.—p. 506.
Cheilitis Caused by Lipstick: Positive Cutaneous Reactions in 5 Persons Sensitive to Cosmetic Dyes. T. Putkonen.—p. 515.
Phthirus Pubis in Capillitium, Cilia and Supercilia. B. Heilesen and I. Lindgren.—p. 533.
Cutaneous Tests for Reiter's Disease: Preliminary Report. A. Storm-Mathisen.—p. 547.
Use of Irrigation Methods for Determination of Recovery from Gonorrhea. R. Pätiälä.—p. 557.
Follow-Up of Children Suffering from Herpetiform Dermatitis. P. Søbye. —p. 561.

Congenital Familial Anhidrosis and Neurolabyrinthitis.—Helweg-Larsen and Ludvigsen describe a Swedish family in which 14 members were suffering from congenital anhidrosis (intensified hypohidrosis). Diminished sweat secretion was noticed in the affected members of the family from the age of 1 year. Instead of sweat drops, granular or ring-formed salt formation appeared on the skin, being most conspicuous on the ridge of the nose, on the upper part of the neck and in the axillas. Subjectively the patients felt uncomfortable in the heat, and in summer they had to quit work on account of a sensation of heat, oppressive headache, dyspnea and palpitation. Biopsy of the right forearm showed absence of sweat glands or excretory ducts of sweat glands. On exposure to a temperature of 127.4 F. (53 C.) for fifty minutes large and very scattered sweat points appeared, most of them localized in the axilla and in the pectoral region; these spots gradually presented a ringlike appearance. Biopsy of the skin revealed a single, definitely hypertrophic sweat gland with high columnar epithelium corresponding to one of the annular sweat marks in the axillary fold. The patients did not present any dental anomalies, defective development of hair, ozena or cranial deformities. Neurolabyrinthitis occurred in these patients between the ages of 35 and 45 years. Because of the ectodermal origin of the labyrinth, the possibility of a common disposition to the labyrinthitis and anhidrosis is to be considered. In contrast to hypotrichotic anhidrosis, the anhidrosis in the authors' cases was transmitted by simple dominant inheritance. An autosomal morbid factor different from that for hypotrophic anhidrosis is suggested which may have a pleiotropic effect on the development of the sweat glands and labyrinths.

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Book Notices

A Bibliography of Infantile Paralysis 1789-1944, with Selected Abstracts and Annotations. Edited by Morris Fishbein, M.D., Editor, Journal of the American Medical Association. Compiled by Ludvig Hektoen, M.D., Chief Editor, Archives of Pathology, and Ella M. Salmonsen, Medical Reference Librarian, John Crerar Library, Chicago. Prepared under direction of The National Foundation for Infantile Paralysis, Inc. Fabrikold. Price, $15. Pp. 672. Philadelphia, London & Montreal: J. B. Lippincott Company, 1946.

Beginning with Underwood's clinical description of infantile paralysis in 1789, this book records the growth of our knowledge of the disease in all its aspects—clinical, pathologic, epidemiologic, microbic and therapeutic—year by year to the end of 1944. It would be a mistake, however, to infer from this statement that infantile paralysis did not exist before Underwood's time, as references are listed to writings dealing with evidence that cases occurred even away back in ancient times. One interesting omission deserves mention, namely the description by Charles Bell in 1836 of an epidemic fever with paralysis in children on the island of St. Helena. This appears to be the earliest outbreak of infantile paralysis as now known. The use of the bibliography is facilitated by a comprehensive subject index of the articles and other writings by number. Extensive use of the book confirms the statement in the preface that this arrangement is the most convenient of the methods used in large bibliographies. The subject index takes up about one sixth of the volume. There is a separate index by numbers of authors. In all the bibliography lists 8,320 items, but many items refer to more than one article. As a rule little or no attention has been given to textbooks, medical systems, encyclopedias and routine official publications. The style is consistently that of the *Quarterly Cumulative Index Medicus* but without inclusive pagination. The annotations and abstracts are in general clear, concise and factual. The work of the publisher has been very well done. The items are well spaced on the pages, and the print is easily read. The steady growth of the scientific and practical concern with infantile paralysis is well shown by the fact that according to the number of items the first half of the bibliography covers the years 1789 to 1927. Unfortunately the medical literature of the war years outside of America and Great Britain has not been freely accessible, but this defect as well as omissions and mistakes are to be made good in supplementary publications. The bibliography will lighten greatly the search in the literature on infantile paralysis.

Fundamental Patterns of Maladjustment: The Dynamics of Their Origin. A Statistical Analysis Based upon Five Hundred Case Records of Children Examined at the Michigan Child Guidance Institute. By Lester Eugene Hewitt, Lt. U. S. Army, and Richard L. Jenkins, M.D., Associate Professor of Psychiatry, College of Medicine, University of Illinois, Chicago. Cloth. Pp. 110. Springfield, Illinois: State of Illinois, 1946.

This report is based on the hypothesis that "children who differ from each other in expressing fundamentally different patterns of behavior maladjustment (which, for them, however, are rational patterns of adjustment to the situations which they have experienced) must have experienced fundamentally different patterns of environmental circumstances."

After a brief but illuminating review of previous studies in the field, the authors outline their methods of classifying their data in preparation for statistical treatment—largely by tetrachoric correlation without the calculation of probable errors. Three behavior syndromes were initially postulated and then in general confirmed by the analysis as follows: "(1) assaultive tendencies, temper displays, bullying vengefulness, defiance of authority, etc. (designated as the unsocialized aggressive behavior syndrome); (2) gang activities, cooperative stealing, aggressive stealing, staying out late nights, truancy from school, etc. (socialized delinquency syndrome); (3) sensitiveness, seclusiveness, shyness, cowardness, jealousy, etc. (overinhibited syndrome)." The first of these patterns was found to be most closely correlated with "parental rejection," the second with early "negligence and exposure," the third with family repression and physical deficiency (table XLI, p. 68). Under therapy, the nature of which is not specified, "the unsocialized delinquent showed the least tendency to change. The socialized delinquent showed either improved adjustment or intensification of the problem. The tendency to improvement in school adjustment was greater than that in the home or community adjustment. The best results were obtained with the overinhibited children with improvement the rule" (p. 78).

A psychiatric interpretation of these findings is given in the quasi-freudian terms of intrapersonality conflicts among id, ego and super ego; however, it is recognized that while neutral, permissive psychoanalytic treatment may help the overinhibited child, kindly but firm disciplinary measures are necessary for the unsocialized delinquent, and broadened social contacts are needed by the budding little gangster. Despite the fact that the language of this monograph is so generalized that explicit conclusions are not clearly stated even in the final summary, the publication will prove of interest to sociologists, psychiatrists and other workers in the field of mental hygiene.

Cardiovascular Disease in General Practice. By Terence East, M.A., D.M., F.R.C.P., Physician-in-Charge of Cardiological Department, King's College Hospital, London. Second edition. Cloth. Price, 12s. 6d. Pp. 198, with 40 illustrations. H. K. Lewis & Co., Ltd., 136 Gower St., London W. C. 1, 1946.

Most American physicians are advocates of brevity in medical writing, provided comprehensiveness is not sacrificed to brevity. Dr. East has attempted this almost impossible task and in less than 200 pages of text has undertaken to cover the field of cardiovascular diseases. The author presents his book to the general practitioner of medicine with the statement that it is important that he understand diseases of the heart. While no one would dispute this statement, it is obviously impossible to cover adequately a field as extensive as the one under discussion in such an abbreviated manner.

The general practitioner, as far as medical authors are concerned, has more or less been the "forgotten man." It is therefore important that his refresher education be based on solid principles and not on the superficial handling of important phases of disease. Modern medical teaching, both undergraduate and graduate, is committed to the proper teaching of pathologic physiology. This is particularly true in dealing with diseases of the heart and circulation, where the whole mode of treatment and management depends on a clear understanding and correct interpretation of the abnormal physiologic disturbances which prevail in a given patient. Owing to the abridgment of Dr. East's textbook, this important phase of the subject has not received proper consideration and emphasis. The present day status of medicine no longer permits treatment to be based on subjective phenomena alone.

Many subjects in the book are treated with such brevity as to be unenlightening and certainly cannot offer constructive assistance to the physician whose knowledge of the subject is limited. For example, the problem of congenital anomalies of the heart is covered in seven pages. Similar criticisms are applicable regarding other disease entities.

Modern accessory methods of diagnosis are literally ignored. One and a half pages are devoted to electrocardiography and roentgenography. Does this imply that the diagnostic information furnished by these methods of examination should be withheld from the general practitioner of medicine? This is quite contrary to the American philosophy of medical education. No short cut exists for the acquisition of medical knowledge. There is no doubt that the author's experience and knowledge would permit him to produce a truly helpful and comprehensive work which would completely fulfil his intentions.

Maternity Homes for Unmarried Mothers: A Community Service. By Maud Morlock and Hilary Campbell. United States Department of Labor, Children's Bureau, Publication No. 309. Paper. Price, 20 cents. Pp. 94. Supt. of Doc., Government Printing Office, Washington, D. C., 1946.

This publication of the United States Children's Bureau traces historically the efforts that have been made in the United States to provide maternity homes for unmarried mothers, and it reviews the changes that have occurred in attitudes toward this problem. The first institutions that could be considered maternity homes for unmarried mothers were founded in the middle of the nineteenth century under religious auspices or motivations. At the present time there are approximately two hundred such homes in this country. The problem is reflected by the fact

that over 80,000 live births out of wedlock are reported each year for the United States. The second part of this pamphlet sets forth the point of view of the Children's Bureau as to the manner in which the maternity home can best meet the needs of these unmarried mothers and their infants, and the suggestions offered are intended primarily for those who operate such homes and for the case work agencies with which they cooperate. The pamphlet covers in detail case work service to the mothers and their babies, through either a case worker attached to the staff of the home or from a social work agency, and also discusses group activities, health and medical services and the organization of the home.

Currents in Biochemical Research. Edited by David E. Green. Thirty-One Essays Charting the Present Course of Biochemical Research and Considering the Intimate Relationship of Biochemistry to Medicine, Agriculture and Social Problems. Cloth. Price $5. Pp. 486, with illustrations. Interscience Publishers, Inc., 215 4th Ave., New York 3, 1946.

Biochemistry, in common with practically all other sciences, has advanced so rapidly in recent years that no individual may hope to become an expert in more than a small corner of this vast field. And since each branch of a science tends to develop its own terminology, the scientist away from his own specialized field becomes a layman distinguishable from other laymen only by his understanding of general scientific principles and methods. For this reason, books which attempt to give a comprehensive view of a science by stripping away the barriers of technical nomenclature are valuable not only to workers in that particular science but also to students of all science and especially to students of related sciences. Thus, this book, edited by Green, will be found interesting and useful not only by biochemists but also by physicians and medical scientists interested in obtaining a broad view of the entire field of biochemistry. For here in accurate but not too technical terms about thirty distinguished research workers in biochemistry have described the important developments in their own specialized fields and indicated the trends of future developments in those fields. There are thirty-one chapters dealing with such topics as genes, viruses, vitamins, hormones, enzymes, photosynthesis, nutrition, metabolism and immunochemistry. The result is a readable and stimulating volume from which the student will gain a broader insight not only into biochemistry itself but also into the intimate relationships between biochemistry and agriculture, biology and medicine. Although each chapter contains references for more specialized reading, the value of the book as a reference work would have been enhanced by the inclusion of an index.

Tuberculosis in the West Indies: Report on Sociological and Clinical Survey [1943, 1944]. By W. Santon Gilmour, M.B., Cloth. Pp. 221, with illustrations. National Association for the Prevention of Tuberculosis, Tavistock House N., Tavistock Square, London W. C. 1, [n. d.].

This bound report is based on an investigation (1943-1944) of tuberculosis in certain of the West Indian colonies. The project was supported by the British National Association for the Prevention of Tuberculosis, under whose auspices similar investigations had previously been made in Cyprus and Burma.

Twelve photographs are included, which portray housing and other conditions on these islands. In Trinidad and Tobago tuberculin surveys revealed that 44.3 per cent and 22.2 per cent of the urban and rural school children respectively reacted to tuberculin. In some towns as high as 100 per cent of adults were infected, with a lower percentage in the rural communities. Among children x-ray inspection of the chest revealed evidence of calcification in 20 per cent. However, the author does not state whether an attempt was made to determine how much of this was due to tuberculosis. The tuberculosis mortality rate decreased from 275 per hundred thousand in 1896 to 100 in 1943. Not enough beds are available to isolate contagious cases. Therefore ambulatory artificial pneumothorax is recommended whenever it is indicated.

In a remote rural area in the Barbados 50 per cent of adults reacted to tuberculin, in an area nearer the town 80 per cent, and in the urban area 100 per cent. The mortality rate was 127 in the urban and 31 per hundred thousand in the rural area.

In Granada, one of the Windward Islands, about 20 per cent of the urban and 12 per cent of the rural children reacted to tuberculin. The mortality rate was 79 per hundred thousand. On St. Lucia over 60 per cent of the urban and nearly 45 per cent of the rural children reacted to tuberculin. The mortality rate was 96 per hundred thousand. On the Leeward Islands the percentage of children reacting to tuberculin ranged from about 7 to 33. The highest mortality rate, over 250 per hundred thousand, in the West Indian colonies was found in the Bahamas. This is 500 per cent higher than in the United States and 400 per cent higher than in the British Isles.

Throughout the West Indian colonies the author found a low incidence of extrathoracic clinical tuberculosis. Generally speaking, tuberculosis has not been a serious problem among the cattle. However, in Antigua of the Leeward Islands the tuberculosis rate is high among the oxen but low among the dairy cows. The author has strongly recommended such procedures as testing young children with tuberculin in seeking the sources of their infections. He recommends the greater use of all diagnostic facilities, isolation of contagious cases, ambulatory artificial pneumothorax and other forms of collapse therapy.

This sociological and clinical survey provides a fine view of the problem in the West Indian colonies, and the recommendations which Dr. Gilmoure has made are excellent for its solution. The British National Association for the Prevention of Tuberculosis has contributed a splendid service by making this monograph possible and in planning for further similar projects.

The Technical Minutiæ of Extended Myomectomy and Ovarian Cystectomy. By Victor Bonney, M.S., M.D., B.Sc., Consulting Gynæcological and Obstetric Surgeon to the Middlesex Hospital, London. Cloth. Price $6.50. Pp. 282, with 242 original drawings by the author. Paul B. Hoeber, Inc., 49 E. 33d St., New York 16; 90 Great Russell St., London, W. C. 1, 1946

This book is by one of the leading British gynecologists and is his justification for the operation of myomectomy. He reports some 632 myomectomies with a 1.1 per cent maternal mortality. He speaks of removing as many as 225 myomas from one uterus and of removing as much as 21 pounds of tumor from 1 patient and still leaving the uterus in each instance. Slightly more than half of the patients were followed up; in 2.3 per cent fibroids recurred; in approximately 2 per cent the menorrhagia recurred. Of about half of the patients followed up pregnancy occurred in 38 per cent, or a total of 52 patients became pregnant. In America multiple myomectomy in general was given up several decades ago because of the initial high mortality and especially the late mortality due to intestinal obstruction. Bonney describes 301 cases in which he was able to peel off enough ovarian tissue from large ovarian tumors, thus preventing castration. Ninety patients had a follow-up, and of 48 patients in whom conception was possible 16 became pregnant. It is not stated how many of the myomectomies and cystectomies were definitely indicated in women who were anxious to have children. The drawings with their extensive legends make up the greater part of the book. It belongs only in the libraries of medical schools.

The Etiology of Deaf-Mutism with Special Reference to Heredity. By Harald Lindenov. Translated from Danish by Axel Andersen. Paper. Pp. 268, with illustrations. Einar Munksgaard, Norregade 6, København, K, 1945

This monograph by Lindenov represents a study of 480 deaf-mutes among thirty-two families living on the Danish islands of Seeland, Lolland and Falster. On the basis of his study the author concludes that sporadic deaf-mutism has a strong hereditary determination and that the inheritance tends to follow a simple autosomal recessive mode. This is in general agreement with the conclusions of previous investigators. The author also concludes that so-called acquired deaf-mutism may in many instances occur only when a hereditary predisposition exists. His evidence for this interpretation, though very suggestive, is not conclusive. To a geneticist the analysis of the available data does not seem complete. However, all in all, the study is an excellent one. It represents the type of genetic investigation that is needed with respect to all those human characteristics which are believed to have some hereditary basis but for which few data are available. It may be appropriate in this connection to point out that studies of the type exemplified by Dr. Lindenov's monograph are few and far between in the United States. Opportunities, however, abound everywhere.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT OF ACUTE CORONARY OCCLUSION

To the Editor:—What is the present treatment of acute coronary artery occlusion? Has the use of papaverine been discarded? Is Dicumarol being used in coronary thrombosis? Is aminophylline of much value?

M.D., California.

ANSWER.—There is as yet no newly introduced therapy for acute coronary occlusion that has made much difference to the course of the disease despite the occasional enthusiasm for one new measure or another. The therapy that is most favorably regarded by the majority of clinical observers consists in the treatment of the acute attack and in the following convalescent care.

Pain itself, which is almost invariably the important initial symptom of acute coronary occlusion, is best controlled by morphine sulfate, which may be given intravenously for more rapid action. The necessary dosage of morphine varies from ⅙ to ½ grain (0.01 to 0.03 Gm.) or more (in divided doses). It is unwise to give more morphine than is absolutely necessary, because of the disagreeable nausea and vomiting that may be induced thereby and because of the depression of respiration and gastrointestinal function. The administration of atropine may lessen somewhat the vagal overstimulation by the morphine. Aminophylline, papaverine and oxygen have sometimes seemed helpful, particularly oxygen if it is readily available, but usually these measures are not essential. Nursing care is of prime importance, and if there is a state of shock, treatment should be directed against that; the experiences of some have indicated the possible, sometimes lifesaving, value of plasma itself in extreme cases. Most patients, however, do not have a high degree of shock.

The convalescent care includes rest in bed for a minimum of three weeks, a period which will suffice in a large number of cases but may need to be lengthened if there are complications. It is a common practice for rest in bed to be prescribed for three to four weeks and then for a month to be devoted to the return to a normal quiet life, the first week sitting in a chair more each day, the second week walking around on a level more each day, the third week going up and down stairs once a day and the fourth week getting out and around. It is often helpful and wise to arrange for a third month to consolidate the convalescence and to get the person back into good condition physically and mentally.

The use of Dicumarol or heparin, either to prevent coronary thrombosis or its spread or to treat the condition itself, hoping thereby to reduce the amount of intracardiac thrombosis, is still in the experimental stage. One of the important complications of coronary thrombosis is pulmonary embolism from venous thrombosis of the legs, and therefore it is well to keep the leg muscles, especially the calf muscles and feet, quietly active even during the first weeks in bed. This can be done without harm in the absence of important complications.

Other therapy during convalescence such as the use of digitalis and aminophylline depends on the need; in other words, symptomatic therapy should be the rule. A measure of possible importance and value, though difficult to prove, consists in the regular administration of quinidine sulfate 0.2 Gm. (or 3 grain) tablets four to six times a day. This may avert ventricular fibrillation during the first two weeks of the illness.

LOW BLOOD UREA NITROGEN

To the Editor:—A patient has an abnormally low blood urea nitrogen as an incidental finding. Most of the determinations are about 4 mg. per hundred cubic centimeters. The usual causes of a low blood urea nitrogen, such as severe liver disease, low protein intake or excessive fluid intake, have been ruled out as well as the possibility of a laboratory error. Please give references to similar cases in the literature and the possible mechanisms involved in such an abnormal lowering of the blood urea nitrogen.

M.D., Illinois.

ANSWER.—Either the normal limits of blood urea nitrogen or the technical error of its determination or both are subject to wider variations than is generally appreciated. The significance of very low values for blood urea nitrogen has been discussed by Bowman, R. O.; Crowell, F. F., and Oslon, L. F.: *J. Lab. & Clin. Med.* **30**:706 (Aug.) 1945.

POSSIBLE PARINAUD'S CONJUNCTIVITIS

To the Editor:—A woman aged 35, who is a grocery clerk, gives the following history: For two weeks she had noted soreness at the outer angle of the left upper eyelid. A few days later she developed a preauricular adenitis which gradually became more swollen, moderately painful and extended beneath the angle of the left mandible. She had been using sulfadiazine ointment in the eye. The eyelids stuck together when she arose. There had been no pain in the eye and no disturbance of vision. The pupil of the right eye had been somewhat larger than that of the left for a long time and the patient did not think that this finding was related to the present condition. Physical examination revealed a temperature of 99.4 F. and pulse rate of 88. There was a large preauricular adenitis, firm, moderately tender, and nonsuppurative with some reddening of the skin. The left upper eyelid was mildly edematous. There was a minimal bulbar conjunctival reaction consisting of some engorgement of the vessels in the outer angle of the eye. Both upper and lower palpebral conjunctivas were acutely inflamed. There was no tearing and no discharge. Over the upper palpebral conjunctiva there was a thin, whitish exudative film which was mildly tenacious but could be removed without difficulty and without bleeding. At the outer angle of the left upper palpebral conjunctiva, about 1/8 inch from the lid margin, there was a papillary mass about 3/16 inch in diameter and elevated about 1/16 inch. The sharp, sloping under edges of this mass gave it the appearance of a small toadstool. It was not pedunculated, tender or ulcerated. The left pupil was smaller than the right, but both reacted well to light and in accommodation. Ocular tension was normal. The cornea, iris, lens, media, fundus and disk were normal. Smears made from the exudate and from conjunctival scrapings did not show inclusion bodies, bacteria or eosinophils, but many pus cells were present. The right eye was normal except for a questionable minimal exophthalmos. Treatment consisted in bed rest, warm moist compresses, 0.25 per cent zinc sulfate and codeine. The condition was unchanged after two days' treatment. Penicillin ophthalmic ointment was then prescribed, followed in one day by a slight decrease of the bulbar conjunctival reaction. During the next forty-eight hours the patient was given 360,000 units of penicillin intramuscularly in a dosage of 20,000 units every three hours. Twelve hours after the penicillin was started the pain disappeared and in four days the bulbar conjunctival reaction had completely subsided. The adenitis decreased progressively until it had practically disappeared after two weeks. The papillary mass remained about the same size and was treated with 1 per cent silver nitrate followed by irrigation with boric acid. Please discuss the nature of this illness and of the small mass on the upper lid. There was no history of possible tularemia or syphilis. What is the cause of the inequality of pupils?

M.D., Kentucky.

ANSWER.—It is difficult to make a diagnosis of the lesion described in the query. It is possible that a biopsy, culture and animal inoculation of the papillary conjunctival mass described would have given considerable information regarding the cause of this condition. It might not be too late at this time to excise the small mass, have part of it preserved for microscopic examination and the other part used for animal experiments, bacterial smears and cultures. Leptothricosis is a strong possibility. The organism is difficult to demonstrate, and every effort should be made to do this. The case described resembles Parinaud's conjunctivitis. Tularemia should be excluded by agglutination test of the blood in spite of the splendid response to penicillin, which would tend to rule out tularemia.

A unilateral dilated pupil may indicate some irritation of the cervical sympathetic, provided one is sure that there has been no local trauma to produce a paralysis of the sphincter. Irritation of the cervical sympathetic can be due to a lung apical lesion, pressure from the thyroid gland, enlargement of the mediastinal glands, cervical rib or other lesions in the area of the cervical sympathetic nerve.

PREGNANCY AND BRUCELLOSIS

To the Editor:—A woman has chronic undulant fever and is well controlled by brucellin therapy. She is now over six months pregnant, is in good physical condition and is pursuing a normal course. Can she breast nurse the baby without any danger of transmitting undulant fever through her milk to the newborn? What are the chances of premature birth in women with chronic undulant fever? In a previous pregnancy, at which time the undulant fever was unrecognized, she was in poor physical condition and gave birth when the fetus was 7 months old.

M.D., New Mexico.

ANSWER.—A good publication covering these questions is the paper on Undulant Fever in Children, by O. E. Hagebusch and C. F. Frei *(Am. J. Clin. Path.* **11**:497 [June] 1941). There is not enough experience to answer the first question satisfactorily. Insufficient additional unpublished experience indicates that the better the mother's disease is controlled during pregnancy and during lactation the safer it is for the babies to nurse, but it should be noted that the paper cited presents exceptions.

Morbidity data are inadequate to permit even an estimate of the frequency of abortions or premature deliveries caused by brucellosis. The paper cited documents a number of examples. It is known that for a small number of women who had previously experienced abortions or premature deliveries caused by brucellosis, favorable responses to vaccine therapy were accompanied with normal gestation periods and normal postpartum courses.

RECURRENT PHARYNGITIS

To the Editor:—A married woman aged 27 has had recurrent episodes of "sore throat" for many years. A tonsillectomy was performed at 6 years of age but the adenoids were not removed. At 12 years of age some lymphoid patches were removed from the pharynx. Attacks of pharyngitis occur from two to four times a month, regardless of season, usually without any known precipitating factor. Some attacks are accompanied with considerable thick postnasal secretion. Mouth breathing at night is usual. She has an angiospastic tendency: the hands and feet are usually cold during the winter months, and a few years ago on several occasions the fingers became bluish red while the patient was working indoors. Her general physical condition is good. Her height is 5 feet 8 inches (173 cm.), her weight 140 pounds (63.5 Kg.). The oropharynx presents patches of hypertrophied lymphoid tissue alternating with areas of pale mucosa where dilated vessels are seen during attacks. The nasopharyngeal vault contains reddish, scarred adenoid tissue. The basal metabolic rate was minus 15 and remained at this level on thyroid 1 grain (0.06 Gm.) per day. For four months she has been taking 25,000 units of vitamin A daily in addition to a normal diet. Recently she has received three x-ray treatments one month apart directed towards the nasopharynx and the oropharynx. The last treatment was given two months ago; no particular relief has been noted, for she recently had three attacks within a fortnight. The throat during one severe attack this winter yielded a pure culture of hemolytic streptococcus. Most of the episodes are controlled in a few days with sulfadiazine in small doses, but the repeated use of this drug seems inadvisable. Please discuss treatment.

M.D., New York.

ANSWER.—It is not easy to make a diagnosis in the case described in the query, but it is hard to believe that the frequently recurring attacks of pharyngitis are independent of a local or general cause. Because the general physical condition is stated to be good, the most likely local cause to be sought would be a suppurative sinusitis. It is not likely that the sinuses involved would be the obvious ones, such as the frontal or maxillary sinuses. It is more probable that a suppurative condition, if present, would be in the posterior ethmoidal or the sphenoidal sinuses.

The first step in diagnosis would be an x-ray examination of all the sinuses. Iodized oil studies could be done at the same time. Probing and washing of all the suspect sinuses would be next in order. Discovery of a sinus suppuration, let us say in a sphenoidal sinus, could account for many if not all of the symptoms described. Treatment thereafter would be dictated by response to the usual therapeutic measures.

By a careful history, examination of nasal smears and skin testing an attempt should be made to determine the presence or absence of an allergic factor. Combinations of suppurative and allergic states are frequently stubborn, at times obscure, and capable of giving a clinical picture as described in the query.

VASECTOMY

To the Editor:—Two patients with moderate enlargement of the prostate and few symptoms of urinary or other disturbance have been told by their physicians that vasectomy should be performed to prevent enlargement and cancer of the prostate. What are the effects of vasectomy?

F. A. Mills, M.D., Rawlins, Wyo.

ANSWER.—Vasectomy will have no effect whatever on an enlarged prostate gland. It will not prevent cancer of the prostate. It is not indicated in the treatment of any disease of the prostate. It is done routinely in some clinics previous to operations for prostatic hypertrophy to prevent epididymitis.

AFTER-EFFECTS OF PROLONGED PENICILLIN ADMINISTRATION

To the Editor:—A patient received a large amount of penicillin for a long time. Have any renal or intestinal after-effects been reported from the prolonged administration of penicillin?

William D. Baun, M.D., Philadelphia.

ANSWER.—Aside from the patients who become sensitized to penicillin there is no evidence that there are any other after-effects. There is no literature that can be found indicating that there are renal or intestinal after-effects.

TOXICITY OF DETERGENTS

To the Editor:—What detergents are harmless if swallowed?

Reuben E. Stone, M.D., Washington, D. C.

ANSWER.—None of the newer chemical detergents are known to be perfectly safe to take by mouth. General information on cutaneous detergents may be found in the article by C. Guy Lane and Irvin H. Blank in THE JOURNAL, March 7, 1942, page 804.

SPECIFICITY OF WEIL-FELIX REACTION

To the Editor:—Please discuss the agglutination of proteins OX 19 (Felix-Weil reaction) in such diseases as pneumonia and infectious hepatitis. Positive agglutinations have been found in cases in which a diagnosis of virus pneumonia or hepatitis has been subsequently established.

Arthur R. Abel, Orange, N. J.

ANSWER.—The agglutination of the proteus OX strains (Weil-Felix reaction) is primarily of value in the laboratory diagnosis of certain rickettsial diseases. Since these proteus strains have nothing whatever to do with the etiology of the rickettsial diseases, the Weil-Felix reaction must be considered nonspecific. It is not surprising, therefore, that low titered reactions have been reported from a wide variety of clinical conditions, including cancer, malaria and pregnancy. Cross reactions with relatively high titers have been observed in typhoid, brucellosis, tularemia and Weil's disease, to mention a few. The sensitivity and specificity of the test vary considerably from laboratory to laboratory. Reliance on the Weil-Felix reaction as a diagnostic aid in rickettsial disease should rest primarily on the rise and fall in titer rather than on a single test. More specific tests for the rickettsial diseases, such as complement fixation and rickettsial agglutination, are gradually superseding the Weil-Felix test in many laboratories.

TENDON SUTURES IN FINGER AMPUTATIONS

To the Editor:—In a recent article in *Surgical Clinics of North America* Mock advocates in amputation of fingers the suture of flexor and extensor tendons to one another across the stump. In a recent article in the *Journal of Bone and Joint Surgery* this is not advocated in finger amputations.

M.D., New York.

ANSWER.—Bunnell long ago emphasized the importance of not suturing flexor and extensor tendons to one another over the stump of an amputated finger, but on the contrary dividing them as far proximal as possible and permitting them to retract.

Both flexor and extensor tendons of the four fingers work more or less synchronously. They could be compared to a four horse team without horses harnessed abreast of one another. If one horse plants his feet firmly and refuses to move the team doesn't get very far.

Fixation of the ends of the tendons of an amputated finger can be so complete that secondary operation to free them may be necessary to permit free movement of the adjacent fingers.

SIGNIFICANCE OF BREAST STRIAE

To the Editor:—A Negro woman aged 30, unmarried, has white striae about both nipples, extending nearly to the bases of the breasts, and two lemon sized masses in the right and left iliac fossae apparently involving the ovaries. Are the striae positive signs of previous pregnancy or can they be due to uterine fibroids or disease of the uterine adnexa?

M.D., Florida.

ANSWER.—Striae of the breast radiating from the areolas are not an absolute indication of pregnancy. They may develop during adolescence, particularly in the obese girl with large breasts. Striae over the thighs are likewise seen during this developmental period when the immature girl develops the mature figure. Striae of the lower part of the abdomen are less often associated with puberty and adolescence and are more often associated with or a residual finding of gestation. However, here too its presence must not be accepted as an absolute sign of a pregnancy.

Abdominal striae are thought to be due to the hypertrophic changes in the abdominal wall associated with pregnancy rather than to the distention by the growing uterus. The striae of the breasts and hips may have a similar etiology.

CORNEAL TATTOOING

To the Editor:—In Queries and Minor Notes (Nov. 2, 1946, p. 546) is an answer to the question "Is there a better method of corneal tattooing than using 2 per cent platinum chloride followed by 2 per cent aqueous hydrazine hydrate?" I should like to point out that the pupillary area of the cornea is not the only zone where tattooing is indicated. The cosmetic effect of tattooing may be indicated on any part of the cornea. Platinum chloride and hydrazine hydrate solutions, therefore, are not the only ones to be used. Gold chloride followed by epinephrine gives a brown iris effect for the extrapupillary area. Then too, platinum chloride alone will not always give the desired effect, so occasionally the combination of platinum and gold over the pupillary area will result in a blacker pupil. It might also be mentioned that it is feasible to tattoo both black and brown in juxtaposition. Another point of importance is the fact that it is unnecessary to use a trephine to give the appearance of a round pupil, for it is surprising how well an irregularly outlined area looks.

Arthur Alexander Knapp, New York.

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